

COAL AGE

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No. 16

"Tom, I want you to clean up your moral record before I put you on as trackboss in this mine," said a mine foreman to an applicant for a job. He continued, "I know you have a pretty good name as a worker, but I know further that if you had a stronger moral reputation your control over men under you would be better, and your efficiency and usefulness to this company would be greater. You know as well as I do where you are weak, so we need not dwell on that matter. And I want you to understand that I'm not preaching, for I have no right to do that; I am only talking sense based on experience".

"I know what you mean all right," said the other, "but I'm not sure I can do what you want me to." "Well, you'll not get your job until you show me that you're going to try and you'll not hold your job a minute after you stop trying," replied the foreman.

This conversation took place recently at one of the large bituminous mines of western Pennsylvania. The mine foreman in question is a man whose past is none too clear, and he knows it. But he knows, also, that from the time he resolved some ten years ago to clean up his record he has been a different man, rising rather slowly perhaps, but consistently, to a point where he now has attained the respect of all the people in the community in which he lives. Moreover, he has won a reputation as an excellent mine foreman, alive and hustling, getting results for his company and a square deal for his men.

His method of dealing with the applicant for a job was of the right sort. When a man of ability comes along, there is no use in turning one's back on him if he happens to be morally weak. On the other hand, it would be equally

foolish to utterly disregard the man's reputation, and thereby indirectly encourage him in his weakness. The thing to do with such a one is to help him to help himself, and the best way to do it is to make his helping himself a part of his job. That this pays must be perfectly clear when one stops to reflect that it is well nigh impossible for a man to strive to make a clean name for himself without at the same time raising the quality of his work.

Wherever the morality of a community is good, then it is almost certain that the physical conditions of the town and mine are clean, and that due attention is paid to questions of sanitation. It is a great deal easier and more practicable for a mine foreman to insist upon moral cleanliness on the part of his men if he has his mine in clean condition, if his roads are free from dust and rock, and if all low places in the entries are drained to prevent their becoming sumps.

An outside foreman, likewise, can do much to promote moral cleanliness by paying scrupulous attention to the physical condition of the plant under his charge. If the grounds around the various buildings are slovenly and dirty, the chances are that the outside foreman and his men are correspondingly careless of their own cleanliness. If, on the other hand, the office is surrounded by well-kept grounds, the shops and power-house cleared both inside and outside of oily waste and other refuse, then it is evident that there is an efficient foreman in charge, and there is little doubt but that his organization is well aware of the advantages of cleanliness.

After Safety First, we ought to have Sanitation Second, and sanitation ought to be both moral and physical.

Why This Persecution of Coal Men?

A RECENT edition of the New York American ran a large cartoon by Windsor McCay on its editorial page scolding coal men generally and holding them up to view as robbers and oppressors of the human race. The picture was headed, "The Same Old Hold-Up Game," and showed a portly gentlemen known as the coal trust wrapped in furs standing out in a blizzard, going through the pockets of an unfortunate shivering citizen. Underneath the cartoon the editor had written, "The Coal Trust is counting on winter to tie the consumer hand and foot while he goes through his pockets. It is the usual game and is worked every time cold weather threatens, and cold weather threatens every year."

Just why the metropolitan press persists in rebuking the coal industry at every opportunity we do not comprehend. Coal is produced under the most hazardous conditions. The men who mine the product are among the highest paid workmen in this country, ranking third in the great coal state of Pennsylvania. There isn't one mining company in ten that has averaged fair interest on its investment during the past decade. Coal prices are more stable year in and year out than the prices of any other widely-used commodity. Government officials who have collected facts support all these contentions.

Then why must the coal producer engaged in an industry filled with lurking dangers be subjected to continual criticism. The fuel industry in this country is second only to agriculture, employing in all departments considerably more than a million men. Is this business of mining a separate industry standing alone and not linked to the national prosperity? Are we outcasts just because we lead all others in "Safety" and "Welfare" work? Must we be marked as a criminal class just because we do not forever shout our virtues from the housetops?

The coal business will bear the light of day

and we trust sometime, somehow, somewhere, a great newspaper editor will send an honest man to our coal fields and have him search out the truth and write it as he sees it. The European war leaves 5,000,000 bales of cotton in the hands of our southern planters, and everyone, coal men included, is asked by Mr. Hearst, to turn to and lend a helping hand. This is all as it should be and we applaud the worthy intent back of the move; but, cotton growing does not encompass all the industrial life of America, and there are other lines that at least should have encouragement if not material help.

We pay 5c. for 10 roasted chestnuts on a New York street. A good looking rosy-cheeked apple costs us another 5c. Potatoes are 5c. a quart, etc., etc., yet we hurl invective at the coal man who sells us his product at the same old price whether times are good or bad. Once sold the coal is gone forever. The mine owner can't grow any more. In 20 years his property, houses and all, is without value. Apples, potatoes, chestnuts and a hundred other things to eat are rotting on all our farms, and next year the ground will grow more, and in 20 years the farm will still be there producing as usual, probably enhanced in value.

Mr. Hearst, turn your attention to the retail dealers who sell the things we eat and who have the audacity to insist that the so-called free markets of Manhattan be closed in order that the small dealers can charge whatever they please for the things we must have to subsist on.

The coal industry is a worthy business engaged in by the strong daring men of our race. Close our mines and every wheel from New York to San Francisco will stand still. Compared with such a calamity, the present European war's effect on our business life is but a midsummer zephyr. Therefore, be fair, and let an occasional shaft of generous encouragement supplant the unwarranted rays of bitter malevolence that are so often turned on us.

Explosion at Mulga in Alabama

By HENRY S. GEISMER*

SYNOPSIS—The Mulga mine again explodes, this time killing 16 men. Hirsch electric lamps play an important part in the rescue work. A negro miner saves 9 of his comrades. The safety precautions adopted by the owners at Mulga were elaborate and seemingly complete.

A gas explosion occurred at the Mulga mine of the Woodward Iron Company at Mulga, Alabama, at about 9 a.m., Oct. 5, killing 16 men and injuring 11 others. Of the killed, 8 were white and 8 were negroes. Among the injured, it is possible that two are fatally injured.

which are close together, the seam being worked on the double-entry system and men in other parts of the mine did not even know that an explosion had occurred.

The number of men in these two entries was above normal on the day of the explosion because there happened to be a trackman and two helpers also a rockman and one helper working in these entries; all of these men were killed. Most of the men who worked in the eighth and ninth right headings were either killed or injured.

The men go to work between the hours of 6 and 7 a.m., the entrance gates being locked at 7 a.m. As the entries



GENERAL VIEW OF SURFACE PLANT AT THE MULGA MINE

The explosion occurred either in the eighth or ninth heading off the north haulage. All of the men killed were found lying along these two entries with the exception of two men who were found inside the neck of No. 18 room on the eighth right. Several of the men were killed outright, but most of them were apparently overcome by afterdamp.

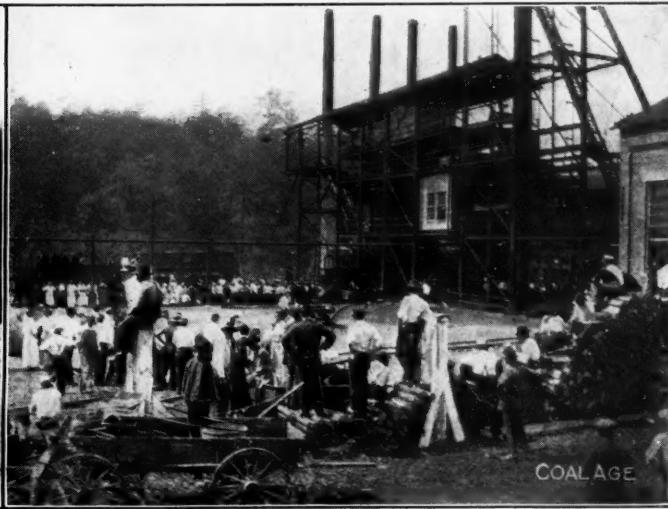
The miners use open lamps in the mine and as several rooms were marked up by the fireboss in his early-morning inspection, as containing gas, it is possible that the gas was ignited by a miner's lamp. The explosion was not felt in any of the entries except the eighth and ninth,

where the explosion occurred are only about three-quarters of a mile from the hoisting shaft, it would seem that all of the men must have been at work more than an hour when the explosion occurred.

THE FANS WERE NOT INJURED

The explosion did not affect either one of the fans nor was the mine damaged at all, so rescue work was started immediately. Helmets from the U. S. Bureau of Mines rescue car, under charge of E. B. Sutton, arrived early in the afternoon and from then on the work of exploring the two headings was carried on rapidly. Before the arrival of the helmets, eight bodies had been recovered.

*Birmingham, Ala.



RELATIVES AND FRIENDS OF VICTIMS ASSEMBLED AT SHAFT JUST AFTER THE EXPLOSION OCCURRED



ONE OF THE RESCUE PARTY

The last body was taken from the mine about noon of Oct. 6.

On the morning of the explosion, M. W. Campbell, a demonstrator for the Hirsch Electric Mine Lamp Company, of Philadelphia, Penn., had equipped eight miners with electric lamps to demonstrate their value. One of these lamps was in use in the ninth right heading and another was in use in the tenth right heading further inside. Neither one of these lamps was extinguished by the explosion and this fact undoubtedly assisted in the work of rescue, as there were no safety lamps in the immediate vicinity of the explosion and time would have been lost.

THE MINE IS WELL EQUIPPED

The mine is one of the best equipped mines in the South; coal is cut by electric machines and hauled by electric locomotives. Two fans are in use, either one of which has considerable excess capacity over total requirements and both of them are arranged for steam and electric drive. A modern and efficient sprinkling system has been installed throughout the mine and all of the rooms, as well as the entries, are constantly sprayed. No dust is allowed to accumulate and the system of inspection is of the best. The coal is shot by shotfirers after all the men leave the mine and safety powder is used.

For some months after the mine was opened, safety



CARRYING BODIES TO THE MORGUE

lamps were used exclusively as a considerable quantity of gas was always present, but after perfecting the ventilating system and greatly increasing the quantity of air, the presence of gas was rarely detected and by a careful inspection with firebosses, all danger from this source had been considered as eliminated.

The mine has always generated dust, but it is not allowed to accumulate, and with the splendid system of sprinkling in vogue, danger from this source has been eliminated as far as possible. The recent explosion seems to bear testimony to the effectiveness of the manner of dealing with the dust problem. All of the headings had visible moisture on the top, sides and bottom.

The mine is on the well known Pratt seam and is reached through two 3-compartment shafts 220 ft. deep. One is used for hoisting and the other for ventilation, but it is planned to use both for hoisting in the near future. The seam is nearly level and has a thickness of about 4 ft. 6 in. The mine is located on the A. B. & A. also the Ensley Southern Railroad.

All of the officials of the Woodward Iron Company, including A. H. Woodward, vice-president; B. E. Purser, general superintendent of mines; J. D. Dalrymple, superintendent; S. L. Morrow, chief engineer, and Tom Black, mine foreman, remained at the scene of the explosion until all of the bodies had been recovered. The commissary was thrown open to the rescuers and with the as-

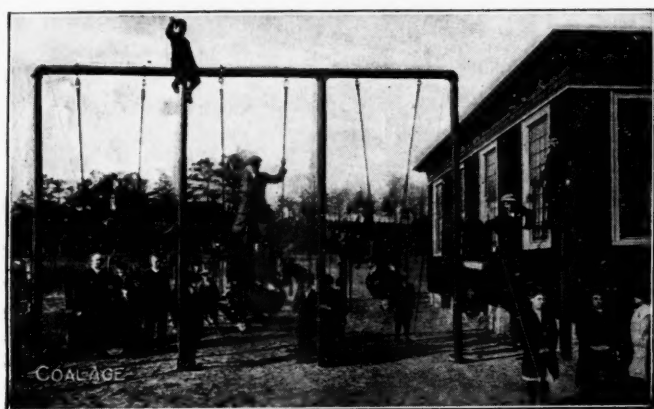


COLORED SCHOOL AT DOLOMITE MINE OF THE WOODWARD IRON COMPANY

sistance of Mrs. S. R. Stevenson and Mrs. J. E. Edwards, no one in attendance at the scene of the disaster whether working or not, was allowed to go hungry.

Chief Mine Inspector, C. H. Nesbit and four of the associate State Mine Inspectors, Tom H. Tinney, W. P. Smith, Frank Hillman and David Kelso, remained on hand to render any assistance possible. Several employees of the T. C. I. & R. R. Co. under the direction of Gen. Supt. John F. Meager also rendered valuable assistance as they were all experienced helmet men.

The hero of the day seems to have been Harry Jackson, a colored miner. He was one of the men wearing a Hirsch electric lamp and after the explosion he went in the ninth right and lead out 9 miners who were in the dark almost overcome with afterdamp. And Jackson was not the only colored man whose actions bordered on the



PLAYGROUNDS AT A WOODWARD IRON CO. MINE

heroic. All during the day and night whenever volunteers were called for, the colored men always volunteered in numbers beyond the requirements and they never hesitated for a moment in carrying out any instructions given them.

With each added explosion it becomes evident that the state is well supplied with trained rescue men and the value of their services is coming more and more to be realized.

The men who came to the top after the explosion, were so badly excited that many of them failed to hang up their checks and so some confusion was experienced in trying to account for all of the men supposed to be at work.

The average daily output of the mine is about 1250 tons and approximately 325 men are employed. On the day of the explosion 284 men were inside. The output comes from two main haulageways starting at the shafts and running at right angles. The miners are about evenly divided between the two territories. All of the bodies will be buried at Woodward.

The complete list of the dead is as follows:

| WHITES | | John Polinsky, foreigner | |
|--|--|----------------------------|--|
| Edward King, aged about 40 years, married | | John Kooternick, foreigner | |
| NEGROES | | | |
| Charles Campbell, aged about 30 years, married | | Gerry Brogdon | |
| W. M. Long, aged about 28 years, married | | Bert Webster | |
| Robert Dubick, aged 39 years, married | | Tom Mitchell | |
| Joe Malkoski, foreigner | | Sam Chatman | |
| Wiley Pilposki, foreigner | | Scot Garrett | |
| | | Warren Wheeler | |
| | | Hamp Swansey | |
| | | Carey Howard | |

The life of H. E. Williams, one of the injured miners is despaired of.

Extracts from a Superintendent's Diary

We mining superintendents are fated to view death in various forms and from many angles. And because we are so often made to feel the mystery of death, we speculate much on the mystery of life.

All of the roads to death wind through our experiences, and with but little imagination, they often seem the roads to life also.

Explosions, fights, strikes and endless accidents, all exact their toll from our community, and the circumstances of death vary from the whimsical to the sublime.

Today we may find ourselves following the frightfully maimed body of a miner (who was all but killed instantly by a fall of rock in his working place) on its journey from the pit mouth to his home; and before we can find courage to leave him alone with his dazed and weeping wife, the victim expires. A few motions of the hands, several incoherent words, a smile and the separation is complete for eternity. His last wish, his last thoughts swallowed up with the great mystery of death.

Tomorrow we may be summoned to a dying one who, instead of parting from us with motions and signs that only the Good God can interpret, lingers long, talks freely and impresses us with the mystery of life rather than the mystery of death. He is a man who has made but a dim mark in the world during his lifetime. Always he has had a grim struggle to keep body and soul together and has only succeeded in that by denying himself of every comfort and pleasure. He tells us that he is ready to die, although he has enjoyed life immensely, and we marvel.

Aft r his death it transpires that in spite of his straitened circumstances, he was constantly assisting women and children through endless complications and tragedies. A little sympathy here, a kind word there, or perhaps just the right advice to a family on the verge of annihilation has caused them to take courage and fight their way to a brighter future. The death of the guiding one opens the lips of the guided and for the first time the camp learns of the things he achieved in secrecy.

He considered his life futile and yet his memory will be honored for a generation in homes where his influence came as a blessing.

Nor is the passing away of those who have fared better according to worldly standards always without surprises. We may have known them as liberal and public spirited and yet when they come to die they insist that they are afraid of the hereafter because they have had so little thought of anything except self. And when all of the facts come to light, as they generally do, it appears that their going away has not affected vitally the current of a single life, and outside of their immediate family they will soon be entirely forgotten. When their gifts were solicited and accepted, there seemed to exist a crying need for them, but now in looking back we realize that somehow we must have been mistaken in analyzing the need or in applying the relief.

And so we gradually learn to admit the futility of trying to judge men by any standards at our command as well as the uncertainty of tabulating successes by what people seem to have accomplished. And although all of our philosophizing does not clear up any of the mysteries of life, still it helps us to accept things without constantly questioning God's purposes.

Dr. McHenry's Chart

The American Mine Safety Association expects to distribute a series of Safety Circulars. The first of these contains the illustration accompanying this article and shows the relative frequency of injuries received in the nine-year period between Mar. 11, 1905 and June 20,

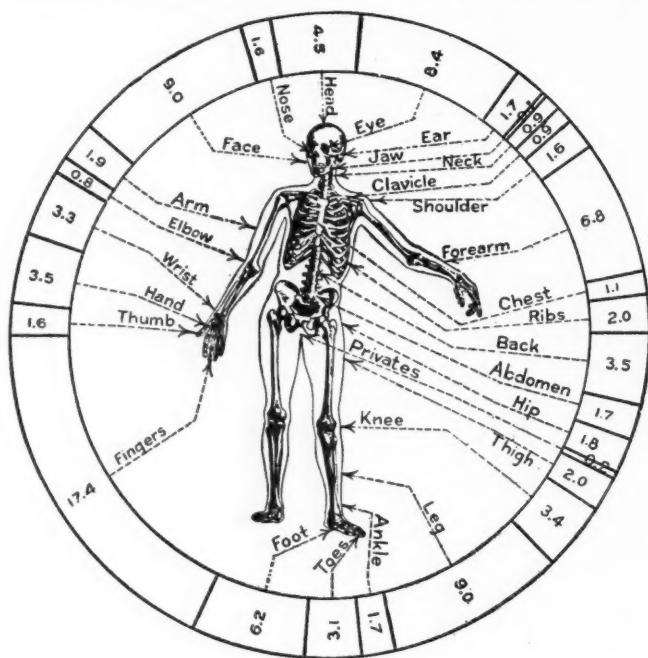


CHART SHOWING DISTRIBUTION OF MINE INJURIES

1914 at a certain bituminous coal mining operation. In all, 6908 injuries have been recorded and tabulated.

The chart was prepared by Dr. Ralph F. McHenry, chief surgeon of the Penn-Mary Coal Co., of Heilwood, Penn. The percentage of reduction of non-fatal injuries in the nine-year period is 49.81. Fatal injuries have been reduced 40 per cent. It is evident that the first-aid work has been not only a cure but a preventive of accident.

The injuries may be further divided as follows: Fractures, 4.4 per cent.; lacerations, 38.2 per cent; contusions, 33.5 per cent.; burns 5.2 per cent.; punctures, 18.56 per cent.; dislocations, 0.23 per cent.

The Problem of Timbering Anthracite Mines

Chief James E. Roderick of the Pennsylvania Department of Mines calls attention in his latest annual report to the gigantic and increasing costs of the anthracite mine operators, laying especial stress upon that of mine timbering.

"Of the many problems that confront the mine management," he writes, "the most serious is the timbering of the mines. With every passing year this problem becomes greater and more difficult to solve. Not many years ago, the initial cost of opening an anthracite colliery was deemed a serious obstacle to the undertaking; the great cost of keeping mines free from water was another annoying and expensive feature, but the timber problem now overshadows all others.

"This is a phase of the mining business which the general public knows little about, and yet the timbered gangways and drifts cover a vast extent. In the anthracite region the Philadelphia & Reading Coal & Iron Com-

pany has more than 800 miles of gangways and there is a total of 2000 miles of these underground ways in the Schuylkill region alone."

YELLOW PINE MOST GENERALLY USED

Chief Roderick tells of the efforts of the operators to prolong the life of the timber by methods of preservation, and adds:

"Most of the timber now used in the anthracite mines is yellow pine from the South, and one of the largest anthracite companies, owing to the great demand and impossibility of getting timber in the North, has been sending its own cars South to expedite shipments."

When one reflects that a billion tons of water, or thirteen and a half times as many tons as the coal produced during the year, must be pumped out of the anthracite mines every year, and that the timbering is an even greater expense than this, the cost of placing this vast forest below ground seems staggering. According to a recent calculation, based on the material costs of a number of the larger companies, the anthracite operators spend \$2,593,280 a year for mine timbers and "lagging" and nearly as much again for lumber. The use of steel timbers which are being adopted for permanent gangways on account of their longevity will add to this amount for the next few years, but it will mean a final saving in the replacement bills of the companies.

It is only by increased efficiency in every department and the introduction of mechanical labor-saving devices that the operators have been able to keep the price of anthracite down to its present level. The only changes in the wholesale price of anthracite since 1902 have been an advance of 25c. a ton in 1912 to offset the 10 per cent. increase in wages granted to labor that year and the increased cost of materials, and an advance of 10c. a ton this year to meet the expense of the new Pennsylvania State tax of 2½ per cent. of the value of the coal at the mines.

The Coal Supply of Italy

Italy is almost entirely dependent for its coal requirements upon foreign countries. It produces an inferior quality of lignite only, and that in a very limited quantity. In 1912, its production only reached 660,000 metric tons. Since 1900, the coal consumption of Italy has increased greatly, in consequence of the marked growth in population and the rapid gains in industrial progress. In 1913, the importation of coal, coke and briquets rose to more than 11,000,000 tons, of which France furnished 92,000 tons of coke, and Belgium 6000 tons of coal, 7000 of coke and 400 tons of briquets. By far the greatest part of its coal imports is drawn from England, which in 1913 reached 9,800,000 tons of coal, 71,000 tons of coke and 253,000 tons of briquets.

Although the United States has been finding a market in Italy for coal for the past 25 years, the deliveries have not been important, comparatively speaking; in 1913, they amounted to 281,000 tons. Germany furnished, in 1913, 892,000 tons of coal, 183,000 tons of coke and 133,000 tons of briquets.

As Austria cannot meet its own coal requirements, there is practically no exportation to Italy.

Note—Extract from a paper in Gluckauf, Aug. 22, 1914, by Dr. Ernst Jungst, Essen, Germany. Translated by Henry B. Binsse.

The Verner Theory of the Counter-Current and Where It Leads

BY A MINING ENGINEER

SYNOPSIS—The writer contends that the article by Samuel Dean appearing in the issue of Aug. 22 fails to prove the correctness of the Verner theory of the counter-current, which theory, the writer believes, contradicts the laws of nature. Moreover, he suspects that the theory has done much harm by inducing shotfirers to reduce ventilation before igniting their shots with results which statistics appear to show are disastrous.

The discussion in COAL AGE about John Verner's theory of a counter-current in coal-dust explosions appears to have had a revival following the article by Samuel Dean, which appeared in the issue of Aug. 22. The synopsis heading this article states: "The British Experimental Station accepts many of John Verner's conclusions as published in these columns."

As suggested by James Ashworth in the Sept. 19 issue, it would be interesting to know which of Mr. Verner's conclusions has been accepted. A student of explosion data does not find either in Mr. Dean's article or in the five reports issued by the British Commission, any avowed support of the theory.

PROVING THE INRUSH THEORY

The information given under the subheading in Mr. Dean's article, "Proving the Inrush Theory," while evidently accepted by Mr. Dean and by Mr. Verner, judging by his letter in the Sept. 26 issue, as proving their case, does not appear at all convincing. The pressure curve given is meaningless as it does not show the atmospheric line, and give the relative pressures and time intervals; also, to interpret the results, the distance between the pressure manometer and the shot must also be known. The observations of the swinging board placed at the mouth of the gallery, and of the dust and flame are also indefinite without records of the time intervals starting from the instant when the shot was fired. The chief difficulty apparent in all the discussions by Verner and Dean, is that they do not separate the effects of the igniting shot and of the explosion proper.

VIBRATORY WAVES ARE UNIVERSALLY PRODUCED BY BLASTS

A study of the data and pressure curves obtained by any of the experimental stations shows conclusively that the air waves, started by a shot, travel at the rate of sound waves, 1100 to 1150 ft. per sec., the exact speed depending on the size and character of the gallery. These air waves are entirely independent of those due to the explosion, and are exactly the same in a test in which there is no coal-dust loading as when a violent explosion ensues.

Any violent vibration would set up waves similar to those indicated in Mr. Dean's incomplete sketched curves. But they will be different from those produced by a blast from an explosive because the impulse set up by the latter is due to the rapid evolution and expansion of heated gases, displacing a portion of the air previously in the neighborhood of the shot, the displacement of the

air in the gallery being increased in the case of a shot fired near the inner end of a closed gallery by the inertia of the column of air set in violent motion.

The gases cool rapidly and no one with any knowledge of physical laws would deny that there would be an inward rush of air to fill the void, or partial vacuum. This would necessarily be a vibratory movement while atmospheric equilibrium was being reestablished. One may, with a paddle, give a violent impulse to water in one end of a water trough, and there will be a return wave of almost the same size, followed by waves to and fro, until friction on the sides has absorbed the energy originally imparted.

THE USE OF SPRINGS MAKES THE INDICATIONS DOUBTFUL

When the blownout shot is a large one, the inrush following will be correspondingly large. It may easily carry in dust if present, also produce many effects like those noted by Mr. Dean; although in considering the importance of different movements of the board it may be pointed out that the use of springs to suspend and hold the board in the middle, does not commend itself as being good for scientific observation, since the springs when stretched, through the movement of the board in one direction would tend to pull it back with equal violence in the other direction, followed by other swings to and fro retarded only by the friction of the air and rod, thus making it impossible to draw any conclusions as to the movements after the first beyond the fact that there were other violent movements of the air, which everyone would concede in advance.

Now if the inrush of air immediately following a shot accompanied by eddying and dust raising, whether followed by an explosion or not, or, if the vastly greater inrush following an explosion of coal dust, constitutes Mr. Verner's so called "theory," it would seem to be acceptable to most if not all students of explosion phenomena; but there appears to be another feature in this theory, if his explanation is understood, namely, that there is an "inrush of air along the bottom" in the face of an advancing explosion of coal dust.

THE THEORY VIOLATES NATURAL LAW

This is the feature which appears incomprehensible, as it seems to be so completely in violation of the fundamental laws of physics. How can there be coexistent a great pressure of expanding gases and in the same area of combustion, a depression or void? According to manometric records in the galleries of England, France and the United States, the pressures due to an explosion may rise to over 100 lb. per sq.in., registered at the side of the passageway. When these pressures are high and the pressure or explosion zone is advancing at the rate of 1500 to over 2000 ft. per sec., how is it conceivable that anywhere in that zone, either at the floor or anywhere else, there can be an area of depression, or pressure below atmospheric which would cause a cool current of air to approach the high-pressure area and, as it were, dive under it?

ALLEGED PROOFS FAIL TO CONVINCE

Verner and Dean apparently accept two phenomena as "proofs" of their theory. These are the movements of débris toward the origin of an explosion, of which there can be no doubt and the reported statements of men that they felt incoming currents of cold air. As to the validity of these latter assertions there may be some doubt, for the men were without question in much mental agitation at the time.

They accept these as proofs without taking into account the *time* when the movements of débris or air took place or the relation of such movements to the path of the explosion.

All will concede that an inrush of air follows a shot, and continues in point of time until atmospheric pressure has been reached. If coal dust is present and ignites, a pressure is rapidly built up by the hot gases of combustion, which force their way in every direction where the pressure is lower. Also there is a great inrush following any explosion, and doubtless there is a partial vacuum, or depression of over half an atmosphere, say 7 or 8 lb. per sq.in., following an extensive explosion (records of five pounds have been reported), which unquestionably brings back over the path traversed by the explosion, many movable articles, often of considerable weight. The visible effects of this inrush or return current seem to be improperly attributed to the mysterious "counter-current."

The movement of air in the vicinity of a mine fire has been cited as evidence of similar conditions in the vicinity of an explosion. It has been said that the incoming current of cool air along the floor, passing under the hot gases and smoke from the fire, resembles in its action Verner's counter-current. The conditions are not parallel; first, a fire compared to an explosion is stationary, and second, there is no pressure caused by an open fire, but only a small depression below atmospheric pressure. This is created by the hot gases, which, being lighter than air, rise and cause the heavier cool air to flow in below.

BLOWNOUT SHOTS ONLY ONE OF THE CAUSES OF EXPLOSIONS

If we are to get at the "bottom" of the Verner theory, it does not seem wise to confuse the issue by paying too much attention to the movements surrounding a blown-out shot; according to authentic reports, there are many other ways in which coal-dust explosions have been caused, such as overcharged, but effective shots of long flame-producing explosives, pockets of firedamp and ignition of coal dust by electric arcs from grounding of trolley or power wires. No one can sanely question that at the point or origin of a coal-dust explosion, there must be violent agitation and eddy action of the air to bring the dust into action, for in very few instances is there sufficient coal dust in the air beforehand.

It is to be noticed that Parfitt and Verner in the Sept. 26 issue of COAL AGE, endeavor to combat that part of Mr. Ashworth's letter in the Sept. 5 number, in which he says "that no such reverse current could be produced until the force exerted by the powder or other explosive had expended its energy. It would seem that at the point *C* (points on either side of the mouth of the borehole shown) in the figure, the air would be in a state of compression, instead of a depression or vacuous condi-

tion" existing, as he (Mr. Parfitt) stated, assuming "that the shot was fired in the face of a heading."

IS THERE A VACUUM DURING AN EXPLOSION?

Mr. Ashworth's opinion seems founded on laws of physics, and is supported by the data obtained at the various experimental galleries. For instance, in the Altofts experiments to which reference has so often been made, the cannon was placed in a gallery which was, to all intents and purposes, open at both ends. The gases and flames in many of the tests not only went in the direction the cannon was pointed, but also back past the cannon due to the pressure created by the shot and the explosion (see experiment 116 and others).

There was further direct proof of the pressure surrounding a shot reported in Bulletin 56 of the U. S. Bureau of Mines, entitled "First Series of Coal-Dust Explosion Tests" at the experimental mine, given on p. 39, where in the endeavor to start an explosion from the outside of the mine through a gallery, the cannon was placed against a plank stopping and a hole cut in the same opposite the borehole. The report states "The plank stopping was burst *outward* by the effect of the shot," although it failed to cause an explosion.

An issue might be raised with Mr. Ashworth about the last part of his statement "that when a shot blows out, the heated gases and particles of solid matter are projected into the main roadway, where the blast stirs up the dust. *At this initial moment, the immediate atmosphere in the vicinity is quickly rendered devoid of oxygen, which makes an explosion of the dust and gases at that point impossible.*" Mr. Parfitt considers this as supporting Mr. Verner's theory.

EXPLOSIVES AS MANUFACTURED SUPPORT THEIR OWN COMBUSTION

The question is, why should the atmosphere be devoid of oxygen unless the combustion of firedamp or coal dust has already begun. In other words, Mr. Ashworth and Mr. Parfitt evidently overlook the fact that manufactured explosives of all kinds have their self-contained supply of oxygen, which is nearly enough for complete oxidation, though some further burning may continue in the atmosphere.

The gases from the blast would contain a large percentage of inert gas, but as compared with the amount of air present in an entry of ordinary size, the quantity of gas would be small (and it could easily be figured). Further, the heated condition of the gases and the formation of gas of a most highly inflammable character like CO would offset, in effect, any slight decrease in total oxygen available for the combustion of coal dust in the vicinity.

TO WHAT DOES THE ARGUMENT LEAD?

In conclusion: If for the moment we assume there is a "counter-current," where does it lead us? What does it mean? Does it bring us any nearer to the prevention of explosions? It has been hinted that it suggested the cutting off of the supply of air in the mine, and this method has been practiced by shutting down the fan at shotfiring time in some Western states, including Mr. Verner's state, Iowa, and notably in Kansas and Oklahoma, which states are reported to have more explosions from shotfiring than occur in any two other coal-mining states in the country of many times their output. One

mine is said to have had three in a single year, and another operation two in one month.

Is that what the theory leads to? If it does not, it should be made clear that it only deals with the internal mechanism of an explosion, is of theoretical interest only, and has no relation to the prevention of such unfortunate occurrences as otherwise the general mining public which has neither the time nor the means of studying the matter, is liable to be seriously misled.

Opportunity for Export of Mineral Fuels

In its reserves of mineral fuels, the United States holds an impregnable position as a world power in industry and commerce. Our production of coal overtops that of any other nation and, in fact, nearly equals the combined output of Great Britain and Germany, the nations that rank second and third.

Inasmuch as the United States leads the world not only in coal production, but also in low cost of coal mining, and apparently possesses the greatest reserves, it follows, as was pointed out by Campbell and Parker in 1908, that foreign countries will obviously look more and more to the United States for their supplies of coal. The lower cost of production in the United States, which is due largely to the favorable location of the coal beds and the extensive use of mining machines, is offset in Great Britain by the proximity of the coal mines to the seaboard.

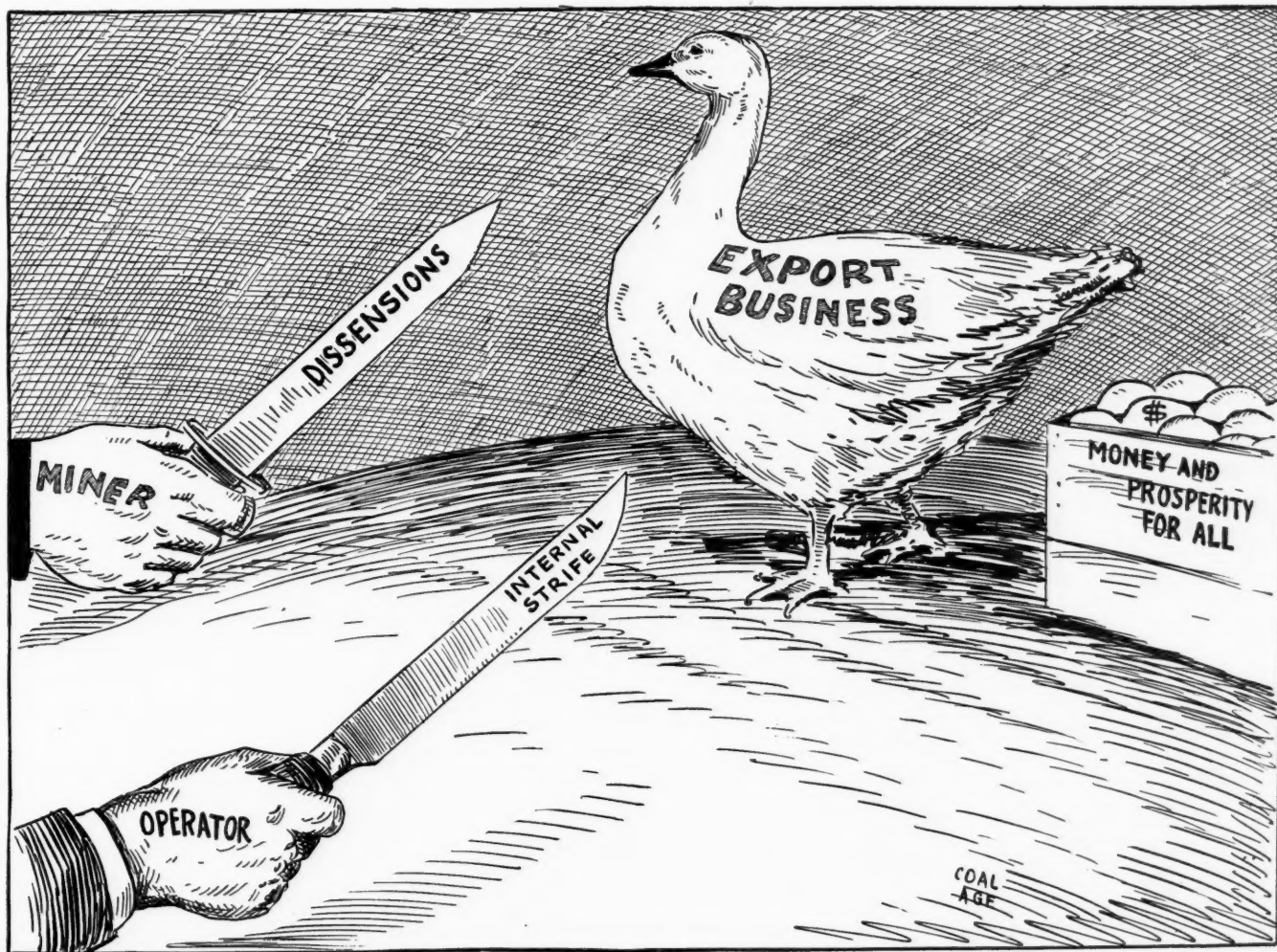
The wages paid in the United States are higher than in any country of Europe. This country's preëminence in the production of petroleum is even more conspicuous, so that the opportunity for exporting mineral fuels presents no immediate problems for the domestic producer.

Mining Active in Virginia

The mineral production of Virginia increased in value from \$14,995,842 in 1912, to \$17,178,580 in 1913, according to the U. S. Geological Survey.

Virginia ranks relatively high among the states in the variety of mineral substances produced on a commercial scale, but somewhat low on the list in the value of the production. Virginia is the leading state in the production of iron pyrite used in the manufacture of sulphuric acid, and in the production of manganese ore, and is the only state in which rutile is produced. It also ranks first in the production of soapstone, most of which is manufactured before being marketed into heat and chemical-resisting articles; such as hearthstones, mantles, griddles, sinks, etc.

The product of chief value, however, in the state is coal, which represents something more than 50 per cent. of the total value of the mineral production. The production in 1913 amounted to 8,828,068 tons, valued at \$8,952,653, against 7,846,638 tons, valued at \$7,518,576 in 1912, an increase of nearly a million tons.



DON'T KILL THE GOOSE THAT LAYS THE GOLDEN EGGS

Electrification of the New River Co.'s Mines

BY EDWARD L. SAYERS*

SYNOPSIS—Shortly after organization, the New River Co. equipped all of its mines with direct-current apparatus. Today, it is rejecting this equipment and placing in its stead alternating-current machinery of modern design.

The New River Co. was organized in 1906 to carry on a general coal-mining business in West Virginia. Shortly after organization, it purchased a number of other concerns, some operating and some still in the development stage, and later it opened up new mines.

At present it owns 14 mines in the Dunloup Creek district and six in the Cranberry or Beckley district. The

first of these operations was opened up in 1893, at Macdonald, and the last was put into working condition at Price Hill, in 1908.

At the time the New River Co. acquired these mines, only one or two were equipped with electric generating units, while now there are 25 direct-current generating units at the mines, ranging between 60 kw. and 250 kw. in capacity. In line with the progressive policy of the management of this company, a contract has been executed with the Virginian Power Co. for a supply of alternating current, and an entirely new equipment is being installed.

The Virginian Power Co. recently ran transmission lines into this region from its central power station on the Kanawha River, near the mouth of Cabin Creek.

The line through the Dunloup and Cranberry districts is shown on the accompanying map, as is also the plan of distribution to the several mines.

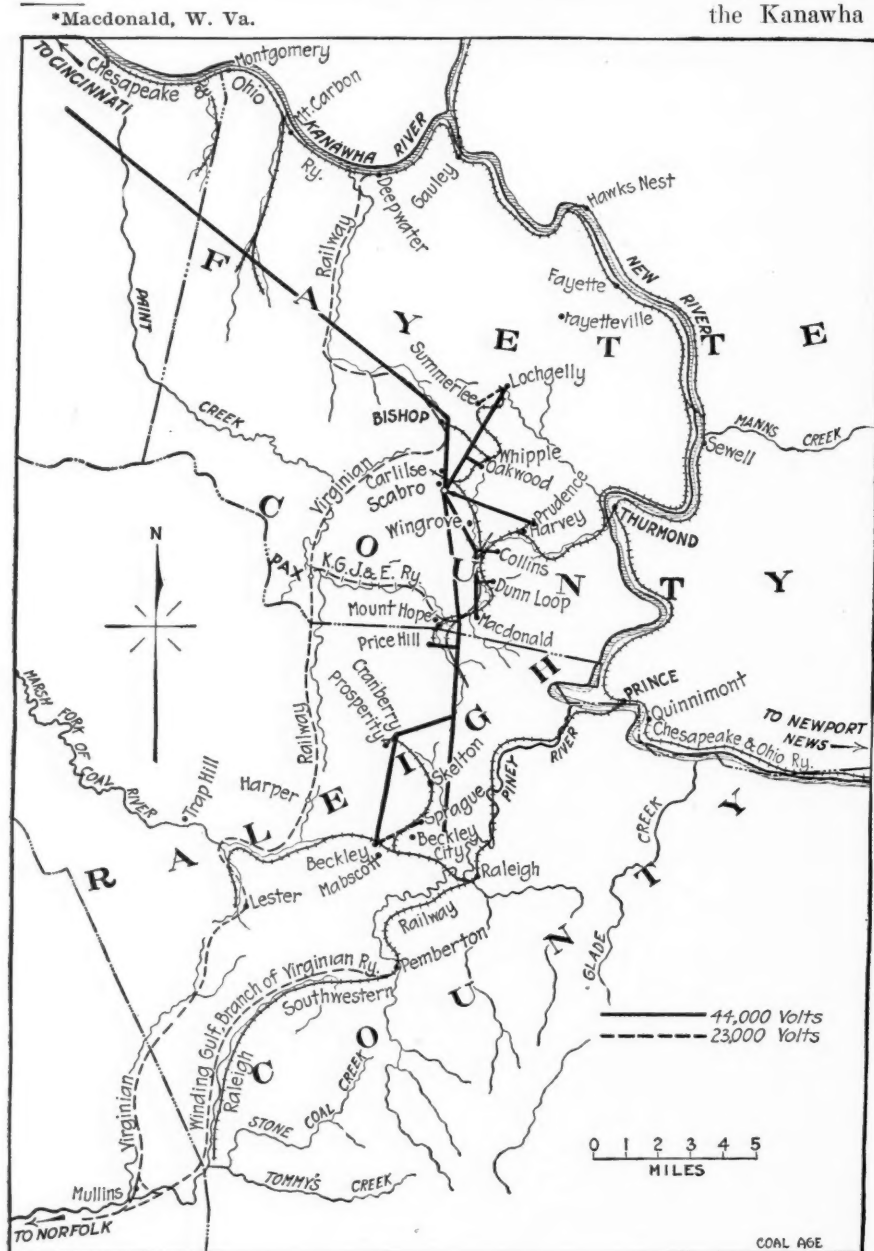
At Scarbro there is a general meter station for measuring the energy used in the Dunloup Creek District, and near Cranberry there will be a similar installation for measuring the power consumed in that district.

The alternating current supplied on the main transmission line is 44,000 volt, 60 cycle, three phase. Distribution lines of 44,000-volt potential radiate from the Scarbro metering station to Lochgelly, a distance of four miles; to Prudence, three miles, and to Macdonald, five miles, while a 2300-volt line runs to Carlisle and Oakwood, about one mile away. The line to Lochgelly provides for Summerlee through a transformer station at the former point, and Whipple is taken care of by a similar station on the branch line opposite the mine.

The line to Prudence supplies power to Harvey, which in reality is operated as one mine with the former operation. The line to Macdonald picks up the load at Collins and Dunn Loop, at which points there are separate transformer stations stepping the potential down from 44,000 to 2300 volts for use in the motor-generator sets and the large pumps, and from this voltage to the lower pressures used for lighting, ventilating and pumping.

The main transmission line between Scarbro and Cranberry will be tapped near Price Hill, and a transformer station there installed to lower the voltage for use at that mine.

From the metering station near Cranberry, a 44,000-volt line will be



MAP SHOWING LOCATION OF THE NEW RIVER CO.'S MINES IN WEST VIRGINIA

run to Cranberry and to Beckley, while 2300-volt lines will be built from Cranberry to Prosperity and from Beckley to Sprague. Mabscott is supplied with direct current from Beckley.

Scarbro-Wingrove, Summerlee, Whipple, Lochgelly, Cranberry-Prosperity and Carlisle-Oakwood are shaft mines, the average depth of which is about 475 ft. The standard hoists selected for these mines have two conical drums varying from 6 to 9 ft. in diameter, driven by 400-hp., 2300-volt induction motors, at a speed of 600 r.p.m. In the case of the Cranberry mine, the shaft of which is 467 ft. deep, a maximum rope speed of 1910 ft. and an average of 1655 ft. per min. are guaranteed. The time of acceleration is 6 sec., of retardation 5 sec. and of caging $7\frac{1}{2}$ sec., and the overall mechanical efficiency is 80 per cent.

Hoists will also be installed at Beckley and Sprague, which are slope mines. The old d.c. voltages of 250 and 550 are being retained in the mines for electric haulage, and motor-generator sets using 2300-volt alternating current and delivering 300 or 600-volt direct current are being installed at the various plants.

Pumps have been standardized into three types, as

follows: $3\frac{1}{2}$ x4-in. horizontal triplex pumps mounted on trucks with 5-hp. d.c. motors for 1000 r.p.m., and either 250 or 500 volts, depending on the standard of the mine; 5x12-in. horizontal duplex pumps driven by motors ranging between 15 and 35 hp., and 10x18-in. horizontal duplex pumps driven by 90- to 125-hp. motors. On these larger machines, 2300-volt alternating current is employed.

The standard ventilator now being installed is a 9x4-ft. double-inlet exhausting reversible fan, driven by a 50- or 75-hp. motor taking 2300-volt alternating current and operating at 580 r.p.m.

All of this new equipment embodies the latest improvements in mine machinery, and, in fact, it has always been the policy of the New River Co. to keep abreast of progress in methods of mining coal. At the time it acquired the mines in this district, it discarded practically all the machinery then in use, at once installing new and modern equipment. Times have changed since then, however, and now practically all of the equipment then representing the best practice in coal production must be disposed of, giving way to the still more modern and efficient alternating-current machinery.

Some Notes on the Panama Canal Routes and Coal Markets

SYNOPSIS—While the canal route will materially shorten the distance from the Orient, it does not bring the Atlantic seaboard coaling ports closer to any important industrial or manufacturing center. Southern ports have the greatest advantage. Competition with oil is an important consideration.

The Panama Canal will not bring the Eastern seaboard of the United States distinctly nearer to any one of the manufacturing countries of the world. Accordingly, one is not to expect that the opening of the great waterway will seriously affect our exports of coal. We are annually exporting to foreign countries in the neighborhood of 23,000,000 tons of coal and coke, having a value of about \$69,000,000; but the great bulk of this goes to Canada. The canal may change the situation somewhat, but nothing radical need be expected at once.

China and Japan will be brought considerably closer by sea to New York and New Orleans, but these two countries are themselves producing about 35,000,000 tons of coal. That their importations from other regions are comparatively small is illustrated by the fact that from Great Britain they get only about 45,000 or 50,000 tons annually. Eastern Australia and New Zealand will be very much nearer to our Atlantic Coast by sea, but this district is mining about 14,000,000 tons. If these two districts of the Western Pacific—one in the north, the other in the south—are importing coal in any considerable amount, they are not getting it from the United States nor from Great Britain.

SHORTENING OF ROUTES

The western part of South America will be brought into a much closer maritime relationship with eastern United States. As this entire district produces but a

moderate amount of coal itself,* and as it has already become a buyer, we may expect that the canal will have an immediate effect upon American coal exports to this quarter of the world.

The particular countries involved are Colombia, Ecuador, Peru, Bolivia and Chile. Two of the principal ports are Callao, Peru, and Valparaiso, Chile. The following tabulation exhibits the change brought about by the canal in respect to all-sea routes from ports in the eastern section of the United States.

Shortening of Sea Routes Between Eastern United States and Western South America (in Nautical Miles)

| Port | Through Straits of Magellan | Through Panama Canal | Decrease |
|--------------------------------------|-----------------------------|----------------------|----------|
| Distances from New York— | | | |
| Callao | 9603 | 3392 | 6211 |
| Valparaiso | 8460 | 4637 | 3823 |
| Distances from Hampton Roads— | | | |
| Callao | 9505 | 3136 | 6369 |
| Valparaiso | 8273 | 4437 | 3836 |
| Distances from Philadelphia— | | | |
| Callao | 9603 | 3302 | 6301 |
| Valparaiso | 8371 | 4603 | 3768 |
| Distances from Baltimore— | | | |
| Callao | 9629 | 3260 | 6369 |
| Valparaiso | 8397 | 4561 | 3836 |
| Distances from Charleston— | | | |
| Callao | 9521 | 2924 | 6697 |
| Valparaiso | 8289 | 4225 | 4064 |
| Distances from New Orleans— | | | |
| Callao | 9986 | 2744 | 7242 |
| Valparaiso | 8754 | 4045 | 4709 |

Callao is not now one of the leading South American ports, in so far as coal is concerned; yet its position makes it representative of the northern part of the coast in respect to distances.

It should also be remembered that the Panama Railroad and the National Railroad of Tehuantepec even now offer as short a route as the canal will. The one railroad has approximately the same location as the canal,

*Chile is the chief producer of coal in South America. In 1913, it produced some 1,400,000 tons. This was far short of the requirements, as she imported some 1,200,000 tons, nearly all of which came from Great Britain and Australia.

and the other crosses Mexico at the most southern point of the Gulf of Mexico. These routes can scarcely come into competition with the canal in respect to shipments made in bulk despite the partial offset of the charges through the locks. The change from ship to railway and from railway to ship involves heavy expenses. These are not due simply to the mere cost of unloading and loading, but to the difficulty of handling the ships economically. A ship that discharges her cargo to the Panama R.R. at its Atlantic terminus must be forthwith supplied with a return cargo. This is a difficult condition to meet and even then the freight rates through the canal would probably be considerably less on bulk shipments.

If, then, there is any coal business in western South America, it will in all probability go through the canal. Bolivia and Columbia do not participate in this business and Peru makes only a small showing. But the latter country has been buying coal. In the fiscal year 1907-1908, she purchased 30,925 tons of bituminous coal from us, the valuation being \$90,251. In the fiscal year 1909-1910, she dropped to 84 tons, but the following year there was a partial recovery, the total being 19,446 tons.

SHIPMENTS FROM THE UNITED STATES TO PERU AND CHILE

Shipments of coal from British ports are indicative of the existence of some business. Apparently, these shipments have been pretty well confined to Peru and Chile. Australia also shipped considerable to Chile.

SHIPMENTS FROM THE UNITED STATES TO PERU AND CHILE

| Country | 1908 | 1909 | 1910 | 1911 | 1912 | 1913 |
|-------------|--------|--------|--------|--------|--------|---------|
| Peru | 30,925 | 11,350 | 84 | 19,446 | 39 | 9,209 |
| Chile | 59,963 | 28,282 | 39,183 | 26,688 | 29,751 | 112,067 |

It is evident from this table that Peru and Chile are both in the market for coal. We may assume that the United Kingdom and Australia will be our chief competitors in the period following the opening of the canal. The canal will put our Atlantic seaboard in a much better position than the best situated of British ports. The route from Cardiff to Valparaiso via Panama Canal is but little shorter than by way of the Strait of Magellan. So that coal shipments might go either way in unbroken cargoes. The enormous advantage possessed by our Atlantic seaboard is one which should be taken under consideration. With such an advantage, it would seem that we ought to do a considerable business from the ports of Philadelphia, Baltimore, Hampton Roads, Charleston and New Orleans.

As between American ports, a consideration of the lengths of the sea routes points to the southern ports as the ones which should handle and develop this South American business; Philadelphia might also be included. Norfolk and Charleston are the most southern of all the coal ports within reach of the Atlantic Ocean. Baltimore, while somewhat more distant by sea, is quite near to a great bituminous coal field. New York is not a natural port for this business, being more remote both by sea and rail. Eastern United States ports from Philadelphia south are the chief ones concerned.

COAL IN COMPETITION WITH OIL

The coal resources of western South America are apparently rather limited. Chile is producing about 1,300,000 tons annually. The others are mining a negligible amount. These countries are increasing their manufac-

turing industries. The business now being done with them by the United Kingdom, Australia and the United States is relatively small. But the Panama Canal will put us in a more favorable position to get a large share of the business, even if it be granted that conditions have heretofore been against us.

In recent years, oil has entered the field as a competitor of coal. This substitution is being energetically pushed especially in respect to railways and ships. In California and Russia, the railways are making extensive use of oil. Russia, for example, uses annually on her railroads 650,000 to 700,000 long tons. It would also seem that the naval authorities in the United States were abandoning the use of coal in respect to new ships. Thus, the United States has now, either built or under construction, 4 battleships, 41 destroyers, 30 submarines, 1 monitor, 3 tank ships, etc., all designed for burning oil and nothing else. The U. S. Navy uses oil at the rate of about 30,000,000 gal. per year. Whether the British Navy will definitely commit itself to oil, it is perhaps too early yet to say. The indications are that it will do so in large part or entirely when the authorities are convinced that an adequate supply will at all times be available.

From a consideration of such facts as these, the conclusion would seem warranted that the next few years will witness important displacements of coal by oil. It may be expected that this movement will affect to some degree the shipment of coal from the United States to the west coast of South America. Whatever oil this district consumes, as its industrial development goes on, will come presumably from four oil fields. These are California, Texas, Mexico and Peru. If the British Navy goes over to oil, we may expect the shipments of best quality Welsh coal to fall off and disappear. But this will hardly affect the exportation of coal from the United States.

However, the supply of mineral oil seems to be limited, so that we may expect the price to advance constantly with the widening of the field of application. The coal supply of the world, and of the United States in particular, appears to be well-nigh inexhaustible. Oil consumption may temporarily retard exportations from attaining their full proportions and also result in a shading of coal prices. But unless some great unexpected sources of supply are discovered, coal will undoubtedly continue well in the lead.

What's the Use?

By C. W. CRAWFORD*

The inducement to builders of hoisting engines to fall over each other in a scramble to furnish a higher class of such machines is meager. Heretofore any old rattletrap that would wind a rope was good enough to hoist coal. Coal has been so plentiful and so easily secured that operators did not discover any dignity in the trade of making engines. Only the sale of coal and the manipulation of coal lands commanded their enthusiasm. So easy it has been to "make good" in coal mining that many of the leading operators have become millionaires (?) and the rest are following in their wake with fair prospects.

The output of coal per each mine is increasing as rapidly as the engines can be pushed to further duty, and

*President, Crawford & McCrimmon Co., Brazil, Ind.

the engineers can be induced to handle their machines more rapidly, regardless of increased risk. Engines that may be rated as small ones are made to do the duty of larger machines by rapid rotative speed and by using small winding drums.

Engine builders are not encouraged to design better machinery, but the same kind their fathers built—and it must be cheap. No innovation nor even a streak of brains is cared for. Greasy mechanics don't know what is wanted in hoisting coal anyway. Engines are made (for this purpose) just as they were 50 years ago with whatever added display the builder can afford for his own gratification, or for a talking point against his competitor. However, upon one point all are agreed—the engines must be more easily handled than formerly. The engineer demands this, and the operator encourages it for the greater output; and the builder in securing greater ease in handling scores a good record, but the operator gets the money.

It usually happens that the operator is the purchaser of new machinery outfits for coal mines, and he assumes that the existing styles are good enough, and but little inquiry is made about better methods. Local preference occasionally prevails but usually only the price is considered, and then ill considered. The battle of prices is generally centered on the hoisting engine regardless of the example of the shrewd dealers in less important detail equipment. And it frequently happens the buyer pays more for a fan to ventilate his mine than he does for the hoisting engine. Or he pays a liberal price for a separator in the installation of the pipe line, that might be made by his engineer, out of pipe fittings, that would be infinitely better and at almost no expense.

Without decrying the quality of any of these goods, the care in the choice of the hoisting engine would seem to be the more important, inasmuch as it is the money maker, while the others are only accessories. But it is unfair to disparage the existing engines, for they are usually well made—for the price—but incomplete. No security against a runaway is provided.

No security against overwinding that will stop a runaway cage having a million foot-pounds of energy stored in it, acting in the space of a few feet and in a fraction of a second of time is vouched safe. It is no censure to the engineer to say he might become paralyzed, or he might drop dead during a hoist—similar accidents have happened.

It is never mentioned in the books or in the advertisements that the momentum of a cage and load at rapid runaway speed is extraordinary, and no estimate of the strength of any device that will stop a cage and load instantly is ever offered nor of the breaking stress or of the energy stored in a 20-ton winding drum revolving at high speed.

That such stress is extraordinary is attested by the number of broken ropes and the number of men killed by falling cages. The excuse of the operators that they all use safety catches cuts no cheese, for they all know such devices are not wholly and always reliable. But they are only culpable in that they do not demand something that is reliable. If such a device were wanted and asked for, it would be forthcoming. It need not be very expensive—the cost of one smashup would pay for it, and then some.

But, however, this is a deeper problem than most men

know or think. In a bad runaway the momentum of the heavy winding drum added to the pull of the engines usually parts the rope. The factor of safety doesn't count, and the investigating committee and the coroner finish the job. Dead men have no rights, to speak of, and relatives and insurance companies get the worst of it.

A safety device to be absolutely safe and reliable would be a whole lot different from the "as if" devices generally used and would necessarily add somewhat to the cost.

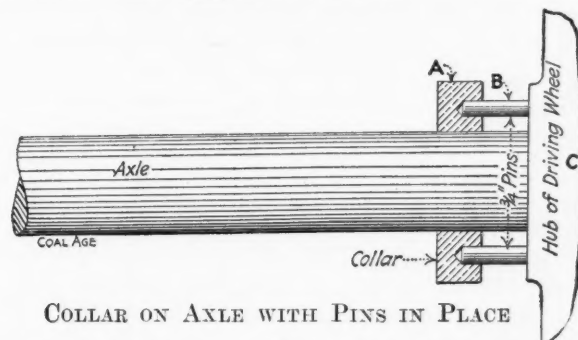
And there's the rub. That is the sticker that heads off the incentive to improve. A few radical improvements are needed, such as a system of expansion and a steam separator. But why contend against the choice of the operators, or the rebuff of the boiler makers? What's the use?

A Scheme to Prevent Collars from Shifting on Locomotive Axles

BY FRANK WALKER*

Repair men who have locomotives of the outside-frame type probably know how nice it is to have the collars slip on the axles, causing the gears to rub on the gear pans, thereby destroying them.

I have tried a good many remedies for this condition but the one here suggested is the best one I have found,



COLLAR ON AXLE WITH PINS IN PLACE

and after it is applied, I have no further trouble from that source.

The accompanying sketch is almost self-explanatory. Remove the collar A from the locomotive axle, and drill two holes in the face next the driving wheel and insert two pins of such length as to hold the collar the proper distance from the wheel, which distance should be ascertained with accuracy before the collar is removed.

Production of Madison County Illinois

Thomas Cunningham, of Edwardsville, mine inspector of Madison County, Illinois, has filed his annual report, showing conditions of the Madison County mines for the year ending June 30, 1914.

During the year 26 mines were in operation, employing 4545 men, who dug 3,689,544 tons of coal. The report shows that 8 men were killed, or one for each 461,192 tons of coal mined. There were 85 nonfatal accidents. In the preceding year there were 12 deaths and 116 nonfatal accidents. Four of the men killed during the last year were killed by electricity.

The miners used 46,372 kegs of powder during the year, or a total of 1,159,200 pounds of powder, an average of one pound to each three tons of coal.

*Vandergrift, Penn.

The Coal Field of Sebastian County, Arkansas

By EDWARD F. HACKETT*

SYNOPSIS—The coal is found in what are known as the Backbone Ridges, and is of a quality low in volatile matter and in ash. Although the measures have a decided dip, the mining conditions are generally favorable.

In the Backbone Ridges of Sebastian County, Ark., occurs the outcrop of the coal measures from which is produced the famous Arkansas smokeless coal. These ridges beginning in Le Flore County, in eastern Oklahoma, enter Sebastian County between the towns of Bonanza and Hackett, extending thence eastwardly for several miles, where they split, one part bearing northeast and the other east and south.

At Bonanza the coal dips to the north at an angle of about 10 deg., outcropping along the foothills of the ridge. The outcrop runs practically due east to Jennie Lind, where it turns to the northeast and rounds the point of the ridge, coming back on the south side. At Greenwood the coal is worked by slopes. It here dips to the south at an angle of about 10 deg., the thickness of the seam varying from 4 to 5 ft. The field is here comparatively narrow and the coal bed comes to surface on the north side of the east prong of the Backbone Ridge.

At Excelsior the field narrows to about 1½ miles. West of this point there have been located several small slopes which show the coal to be from 3 to 4 ft. in thickness, and to maintain a uniform pitch of from 8 to 10 deg. About two miles east of Hackett the coal decreases in thickness to 24 in. in some places.

Hackett is probably the oldest mining town in the county, coal having been first produced here in the year 1884 by the Kansas & Texas Co. This operation was, however, abandoned in the year 1890. West of the town is located the Branner Coal Co.'s slope. At this point the coal dips due south at 10 deg., and shows 4 ft. in thickness.

An analysis of the fuel obtained from this slope shows the following results: Volatile matter, 13.10 per cent.; fixed carbon, 80.01; ash, 6.89; B.t.u. content approximately 13,000.

About two miles west of the Branner slope the outcrop again enters the State of Oklahoma, and is then known as the Panama Segregation by the U. S. Geological Survey.

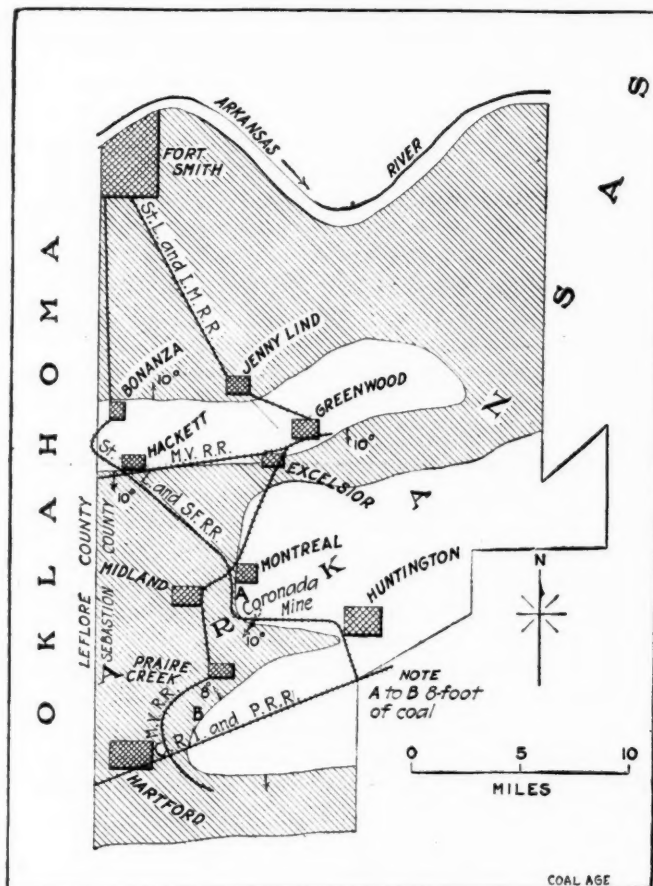
On the south outcrop, which turns south from Excelsior with the ridge, no developments have been made until Montreal has been reached. This latter place was for several years one of the mining centers of the state, but has been abandoned for some time. At this point, the coal averages three feet in thickness and was worked by slopes and by stripping.

From Montreal to Coronado, located on the St. Louis & San Francisco R.R., the coal averages about 3½ ft. in thickness, but the outcrop has been pretty well worked out.

From Coronado mine on, or between approximately the points A and B on the accompanying map, the coal

increases in thickness, but carries a dirt band 10 to 12 in. thick. The upper bench averages 3 to 3½ ft. in depth, and the bottom from 3½ to 4 ft., the two measures remaining in close proximity throughout the Coronado, Huntington and Prairie Creek districts to a point near Hartford. In the Prairie Creek district, however, the dirt band decreases to about 4 in. in thickness.

At Hartford, the bottom vein disappears and only the upper bench is worked. This dips practically due south and shows from 4 to 4½ ft. of clean coal. The country east of Hartford being rough and without transporta-



MAP SHOWING COAL AREAS OF SEBASTIAN COUNTY, ARK.

tion facilities, little development has been made in this section.

The mining conditions in Sebastian County as a whole are good, the roof being of excellent quality and requiring but few props in the 8-ft. coal.

Practically all of this coal bed is overlaid with a stratum of hard, tough sandstone. Firedamp is found in small quantities, but open lights are used exclusively throughout the fields, accidents from gas explosions being extremely rare.

The mines are worked upon the room-and-pillar system. The usual method of preparation throughout the field is by passing the run-of-mine coal over shaking screens. As a rule four sizes are made, the slack passing through a

*Spiro, Okla.

5/8-in. screen, the pea through a 1 1/4-in. screen and the nut through a 2 1/2-in. screen.

The Arkansas state law calls for payment on the run-of-mine weight before the coal is passed over any screen. This, together with the soft nature of the coal found in Sebastian County, and the practice of shooting from the solid, causes the slack production in this field to be extremely high.

Arkansas as a state has no legal requirements for either mine inspectors, mine foremen or fireboss, or, as he is called here, "gas boss." In fact what laws have been put upon the statute books from time to time are widely scattered, and it would require an attorney-at-law some time to sift them all out. Consequently, with the exception of a few of the major statutes, the balance remain upon the books and are unknown to the general mining public. It is quite probable, however, that the present chief mine inspector, Mr. Thomas Shaw, of Midland, has done more for the safety of miners and mining interests throughout the state as a whole in the past 12 months than has ever been accomplished before.

Don'ts for Outside Foremen*

1. Don't forget that your position and responsibility demand strict sobriety, and do not hire or allow to remain in your employ any subordinate official addicted to the use of liquor.
2. Don't fail to see that the provisions of the mine law, so far as they apply to you, are obeyed and carried out.
3. Don't fail to see that all dangerous machinery and all dangerous places are properly protected as required by the mine law.
4. Don't wait until some other official calls your attention to dangerous conditions; detect them yourself and have them remedied.
5. Don't wait until the fire insurance inspectors come around and report to you dangerous conditions.
6. Don't fail to have a signal apparatus placed at important points in every breaker, washery or tippie, for promptly notifying the engineer to stop machinery in case of accident.
7. Don't fail to observe the law governing minimum age of oilers, breaker engineer and other employees.
8. Don't fail to keep all steam boilers in safe condition, properly equipped and examined.
9. Don't forget that thorough and efficient examinations and inspections before accidents bring better results than the same work after an accident.
10. Don't forget that we expect you to help us educate the employees to take care of themselves, and this can best be done by personal instruction and attention.
11. Don't get excited if anything goes wrong; keep your head.
12. Don't fail to correct or discipline anyone you find doing anything wrong or violating the rules.

A Reinforced-Concrete Lining for Mine Shafts

What is believed to be an entirely new application of reinforced concrete was recently undertaken at the Glenmeller Collieries, at Haltwhistle, Northumberland. This consisted of lining two new shafts with concrete slabs reinforced with expanded metal.

These slabs, which were cast in molds on the site, were made 3 ft. 1 in. long, 1 ft. 6 in. wide, and 5 in. thick. They were reinforced near their concave surface with expanded steel of a cross-section of about 1/4 sq. in. per foot of width. They were tongued and grooved to allow of their being fitted and keyed into each other, the joints being later filled with cement grout so that the slabs formed a monolithic cylinder when placed in position.

*From Susquehanna Coal Co.'s Book of Instructions.

A hole was left in each slab about 1 in. in diameter to allow of its being slung and lowered into position after it had been allowed to season for a reasonable length of time. This hole also served as an inlet for cement grout to be injected into the filling behind the slabs after they had been fixed in place.

The two shafts in question were sunk through water-bearing strata which had been previously treated by the Francois method of cementation. During the process of fixing the reinforced lining in position, the space between the lining and the face of the strata was filled with ordinary concrete into which cement grout was injected after the reinforced lining had been secured in place. This rendered the shaft water-tight.

It is said that this new lining possesses certain advantages over the ordinary brick lining as it is more impervious to water and requires no outlay in upkeep expenses once the work is completed. The shafts lined as described above have been subjected to ordinary working conditions for some time past.

Coal Markets of Cuba

Practically 96 per cent. of the anthracite coal imported into Cuba during the fiscal year ending June 30, 1913, came from the United States. In other words, of the total amount imported into Cuba for that period, which was 228,238 tons, valued at \$774,333, 220,965 tons, valued at \$731,636, came from the United States.

The total amount of bituminous coal imported into Cuba for the above named period was 1,125,094 tons, valued at \$3,630,750; of this amount, 1,118,347 tons, valued at \$3,598,121, or about 99 per cent., came from the United States.

Some of the largest consumers of bituminous coal in Cuba are:

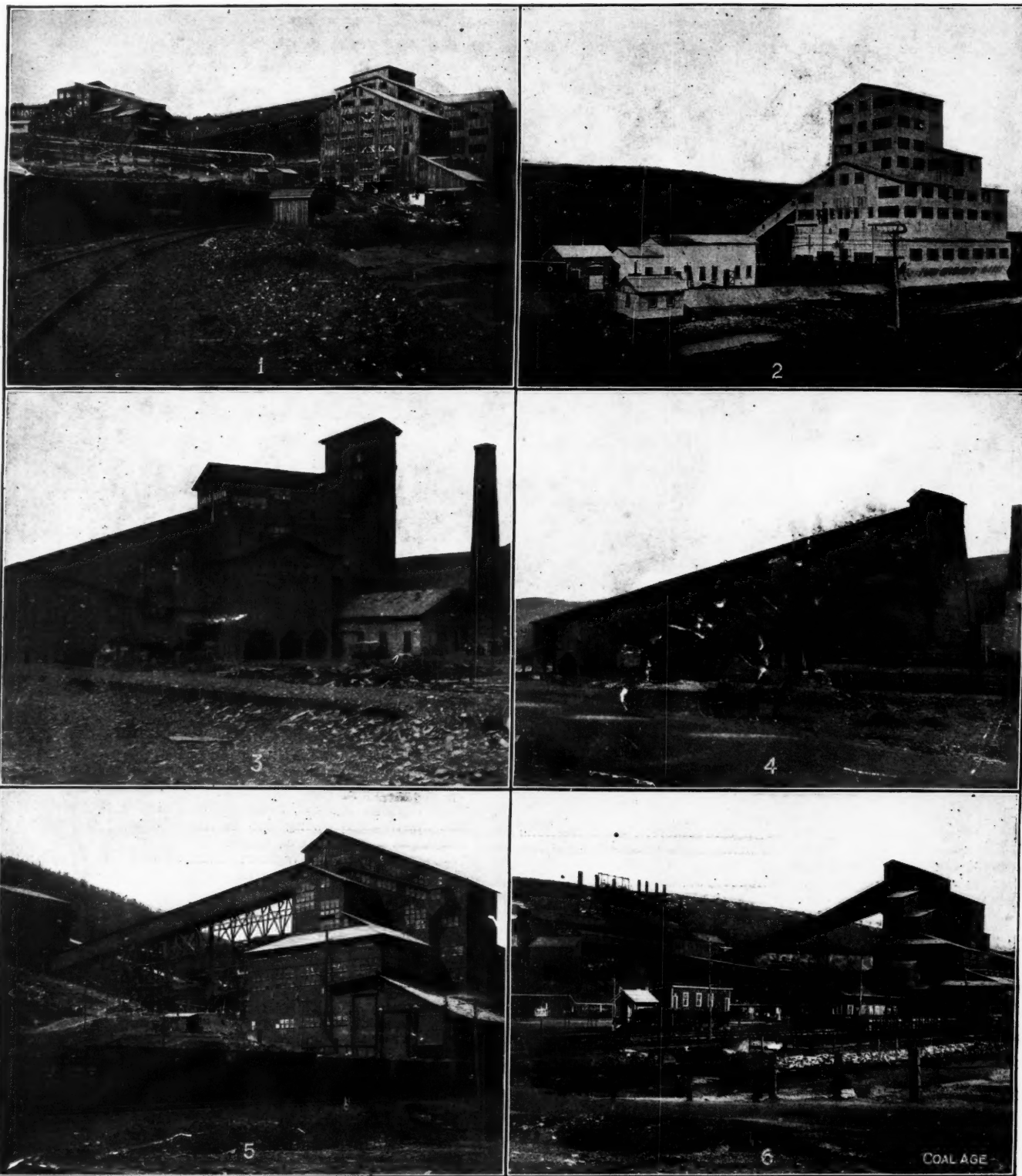
The Spanish-American Iron Co., Santiago de Cuba.
The Juragua Iron Co., Santiago de Cuba.
The Cuba Copper Co., Santiago de Cuba.
Cia. Electrica de Santiago, Santiago de Cuba.
The Santiago Ice Co., Santiago de Cuba.
The Santiago Brewing Co., Santiago de Cuba.
The Cuba Railroad Co., Camaguey, Cuba.
The Guantanamo & Western R.R., Guantanamo, Cuba.
Julian Cendoya, Santiago de Cuba.

American Institute of Mining Engineers—The next annual meeting of the Institute will be held in New York City beginning Feb. 16, 1915. Papers to be presented at this meeting should be in the hands of the Secretary of the Institute not later than Nov. 23, 1914, and as much before that date as possible. If a manuscript is received after Nov. 23, the editorial staff will lend its best efforts to having it prepared in time for the meeting, but cannot give assurance that it will be ready in time. Bradley Stoughton is secretary.

The United States Bureau of Mines, in cooperation with the United States Geological Survey, has undertaken additional and more comprehensive investigations pertaining to the problem of mine caves and surface support. The immediate work of the mining engineers and geologists will comprise detailed studies of the extensive open-cut and underground mining operations in southwestern New Mexico. The field investigations will be conducted with special reference to earth pressures and surface subsidence in relation to the geological formation and mining conditions, and the equipment and efficiency of the large mechanical installations in operation there.

To make your boiler settings tight, scrape them thoroughly and make a thin mix of fireclay or cement or both and let the brick absorb all the mixture they can. Then paint the brick over with an asphaltum-base paint of a kind which will not run at the temperatures which the bricks will attain.—Bromley in "Power."

Lehigh Coal and Navigation Co.



1—TAMAQUA BREAKER. BUILT 1910. WOOD CONSTRUCTION; CAPACITY, 2500 TONS. 2—COAL WASHERY NEAR HAUTO, PENN., KNOWN AS HAUTO WASHERY. RECLAIMING COAL FROM HAUTO REFUSE BANKS IN THE VICINITY OF THE WASHERY. CAPACITY, 1200 TONS PER DAY. ELECTRICALLY DRIVEN. 3—No. 8 OLD BREAKER. BUILT 1873—ABANDONED 1909. REPLACED BY COALDALE BREAKER. 4—No. 9 OLD BREAKER. BUILT 1876—ABANDONED 1909. REPLACED BY COALDALE BREAKER. 5—NESQUEHONING BREAKER. BUILT 1908. CAPACITY, 4000 TONS. EQUIPPED WITH MODERN MACHINERY. STEAM POWER. 6—COALDALE BREAKER. BUILT 1909. CONSTRUCTION, WOOD. CAPACITY, 4000 TONS PER DAY. BREAKER IS EQUIPPED WITH 41 LEHIGH VALLEY PLUNGER-TYPE JIGS. STEAM POWER.

Power Department

Power Generation at Collieries*

SYNOPSIS—Although the utilization of exhaust steam in low-pressure turbines may appear economical, the internal-combustion engine is more efficient than a steam plant. It is believed that the vertical, double-acting, two-cylinder, two-cycle engine will be the favorite of the future for colliery work.

Until recent years economy in fuel at collieries does not appear to have been considered of any great importance. Even at the present day it does not receive at many pits the consideration that it deserves, and wasteful engines for pumping, ventilating, haulage, etc., are used, the consequence being that millions of heat-units are thrown away into the atmosphere every hour in the form of exhaust steam.

In more modern installations greater care has been exercised. Where economy in fuel has received serious consideration, low-pressure steam turbines have been installed to make efficient use of the exhaust from already existing steam engines, and thus provide an economical means of developing electrical power for distribution throughout the colliery.

Economical as this system may appear at first sight, it can only be looked upon as a kind of makeshift; the fact that the most economical prime mover of the present day is the internal-combustion engine must not be lost sight of. Whenever a steam plant is now installed for power-generating purposes at a colliery, the same can only be looked upon as a temporary arrangement if the colliery in the future has to compete with pits equipped with modern power-generating equipment.

GAS ENGINES ARE SUITABLE

The gas engine is admirably suited for colliery work. In cases where inferior coal is available, it can be used most economically in gas-producers of the recovery type; and where the total power required is considerable, the return for the byproducts reduces the cost of gas to a negligible quantity. Where byproduct coke ovens are employed, the surplus gas can be used to advantage in the gas engine, and, of course, for iron works the most economical use for the blast-furnace gas is in this form of prime mover.

Against all this it will doubtless be argued that the gas from recovery producers can be used for generating steam in boilers to drive steam engines or turbines, and also that coke-oven gas can be used in a similar manner; but the fact is indisputable that gas can be used in internal-combustion engines far more economically than in any other way.

Economical as the generation of power by gas engines proves to be, there is another source by which the overall efficiency can be increased, and that is by the use of boilers

heated with the exhaust from the engines. The use of such boilers is now becoming general. They will evaporate, roughly speaking, from $2\frac{1}{4}$ to $2\frac{1}{2}$ lb. of water per hour per brake-horsepower developed by the engine.

The utilization of coal gas principally from coke ovens having a calorific value of from 400 to 450 B.t.u. is receiving more attention every day, and this gas—although somewhat richer in hydrogen than ordinary illuminating gas—is an excellent one for driving gas engines. It is perhaps somewhat strange that more use has not been

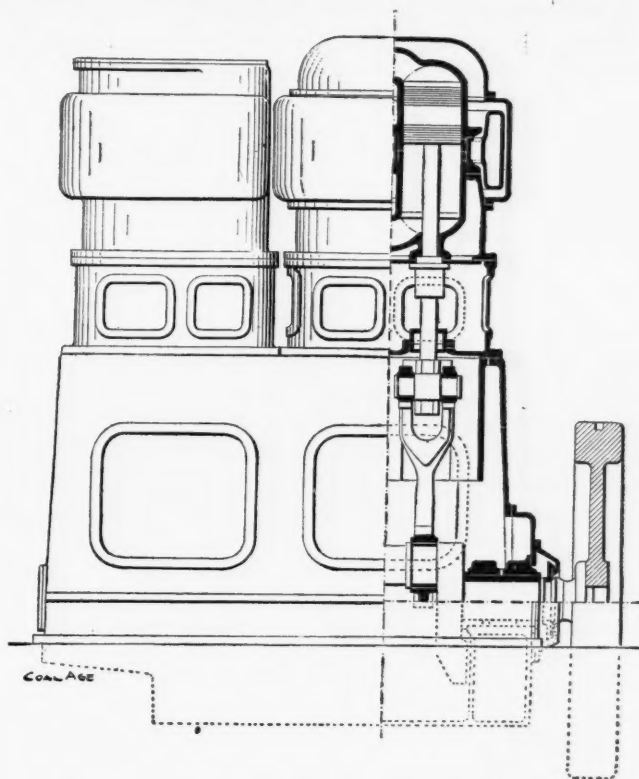


FIG. 1. PART SECTION OF A VALVELESS TWO-CYCLE, VERTICAL GAS ENGINE

made in the past of surplus coke-oven gas, and, generally speaking, of gas engines in connection with colliery work.

THE EXPERIMENTAL STAGE IS PASSED

Owing to failures during development in the early days, managers still hesitate to install large gas engines. The vertical type has, however, long since passed the experimental stage. It is the one most suited for direct connection to electric generators, owing to the possibility of running at fairly high speeds.

The absolute reliability of the high-speed, forced-lubrication, inclosed steam engine has been demonstrated by thousands of examples: consequently, it is to a similar type of gas engine that the colliery manager will naturally look in the future for driving electric generators in his power station.

One of the weak points in connection with large single-acting vertical gas engines is the frequent necessity

*From a paper by John Davidson on "Development of the Internal Combustion Engine for Power Generation at Collieries," presented on June 4, 1914, at the sixtieth general meeting in London, of the Institution of Mining Engineers.

for cleaning out the cylinders. So long as the pistons are exposed on the underside to the crank case, this difficulty cannot be overcome efficiently, as there is no means of controlling the amount of oil which passes up from the crank chamber.

Another weak point is the burning and failure of the exhaust valves, which require occasional cleaning and grinding-in, and many failures are still experienced because of the breakage of these parts. Another weakness is in the ignition gear, although, generally speaking, it must be admitted that failures from this cause are few and far between, provided, of course, that a modern reliable gear is fitted to the engine in the first instance. From the available statistics one infers that the freedom from breakdown in gas engines is very encouraging, and the weaknesses just mentioned may be looked upon as the only ones that are liable to cause occasional stoppage.

For long, continuous work, an engine which is simple in construction is the one most likely to prevail in the end. The tendency in development has been towards simplicity; but for large powers (owing to the prevalent desire to use air-cooled pistons) multi-cylinder engines, mostly of the tandem form, have found favor among engine builders, although this can hardly be said to be in the direction of simplicity.

If the engines are made on steam-engine lines, with double-acting two-cycle cylinders, the size of the working piston need be only about a quarter of that of the four-cycle single-acting type, and for the same power the strains are proportionately less; both these points are advantages in the case of large units.

In the case of single-acting engines, the pistons are usually called upon to serve as crossheads, and, although they appear to wear exceedingly well, this type will doubtless in the near future be obsolete.

THE TYPE OF ENGINE FAVORED

The author suggests that the double-acting two-cycle engine—built on substantial lines, which long experience in steam-engine practice has proved successful—will be the one that will ultimately be used by all large vertical engine builders. Representing this type, Fig. 1 shows in part section an engine made by Mather & Platt, Ltd.

The engine referred to is without valves altogether to the working cylinders; consequently it possesses great advantages in the direction of reliability for continuous work. As the engines are built on the two-cycle principle, separate air and gas pumps are required, but these are driven directly from the crankshaft; their valves also are operated direct from the same element in a manner similar to those of high-speed steam engines. Owing to this fact, no gears, camshafts, tappets, or springs are required, and the machine operates as silently as the well known high-speed steam engine.

Accessibility is of prime importance, and in modern engines this point has received most careful consideration. Even in vertical tandem engines we are informed that it is possible to open up and get at the lower piston within forty minutes on a 1000-hp. machine. This speaks very well for the design.

For long, continuous work, it is also of great importance that the bearing and working surfaces should be liberal, and the strength of the parts most carefully proportioned to resist the work which they are called upon to bear. In the type of engine illustrated, the only working

parts are the main motion-work, which is of ample proportion, and so arranged that it can be well lubricated without waste of oil, the crank chamber being entirely separated from the cylinders by means of a distance-piece. Scraper-glands are fitted at the top of the crank chamber, as is the usual practice in high-speed steam engines. The oil is thus effectually prevented from being carried up into the working cylinders even by means of the piston rods.

The working cylinders are lubricated by mechanically driven lubricators having a separate pump to each feed. The supply of oil is thus reduced to a minimum. By this positive system of lubrication for the cylinders, it is possible to run the engines over exceedingly long periods without cleaning or any fear of their becoming clogged up with oil. This is a great advantage for continuous work.

As the pistons and piston rods are water-cooled, this does away altogether with the possibility of piston seiz-

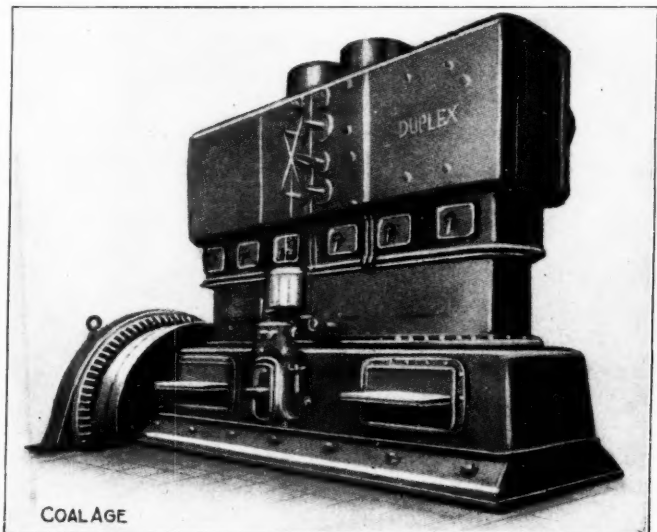


FIG. 2. A 1000-Hp., VERTICAL INCLOSED TWO-CYCLE GAS ENGINE

ure and, as metallic packings are fitted to the piston rods—these having now been brought to a state of perfection equal to those used in steam-engine practice—no fear need be entertained concerning trouble in this direction, and the minimum of attention is required.

In Fig. 2 is illustrated a 1000-b.hp., two-cycle, vertical, inclosed, forced-lubrication gas engine, which may be taken as typical of the type of machine toward which the trend of development is moving. This engine is built on lines similar to those shown in Fig. 1, all the working parts being lubricated by oil under pressure, and, as the engine is of the double-acting type, the turning moment is precisely the same as that of a steam engine. Owing to the absence of gears, valves and tappets, this four-cylinder engine operates as silently as the ordinary vertical steam engine, and the liberal wearing surfaces, combined with the smooth running of the machine, insure long life.

THE GAS MUST BE CLEAN

For continuous heavy service much has been stated with regard to the reliability of the gas engine, but the colliery manager must give careful attention to his side of the business—namely, the production of gas—if he ex-

pects reliability in his prime mover. In the case of boilers, softening plants have often to be installed; in a similar way, in connection with gas-producers and coke ovens, suitable cleaning and purifying appliances must be employed.

Sulphur has to be dealt with drastically, especially where big engines are installed, as in all these cases pistons and rods are of necessity water-cooled. In many instances too liberal a supply of water is used for the pistons, due to the attendants' exaggerated anxiety to feel safe, and acid fumes are condensed on the cool surfaces, causing corrosion. Again, any leakage of water into a cylinder containing sulphurous gas will cause trouble, so that great care should be taken in dealing with this matter. Dust forms another difficulty which requires consideration, but this is one that nowadays causes but little anxiety.

Unwatering a Mine

By I. D. THOMAS*

SYNOPSIS—In removing the water from two slopes, two centrifugal pumps mounted on trucks and directly connected to electric motors were employed. These units were lowered as the water receded.

A few years ago a method was employed for unwatering a mine, with which the writer was familiar, that may be of interest to readers of COAL AGE.

The mine in question being isolated from any of the other operations of the owners, it was decided that electricity would be the most economical power to use, and current was therefore purchased from a large local power company and transmitted for a distance of four miles at 4000 volts and then by means of transformers at the colliery, stepped down to 440 volts.

From the obtainable data, it was calculated that the property contained at least 100 million gallons of water and was making during the dry season about 800 gal. per minute.

the roads were intact; but had been removed in "B" vein slope when property was abandoned.

The many advantages embodied in the centrifugal pump, chief of which, in considering a proposition of this kind, was its maximum capacity for minimum clearance dimensions, led to the selection of this type of water-lifting apparatus, two of which were purchased for the purpose.

The pumps selected were of the two-stage type, capable of delivering 1000 gal. per min., against a total head of 225 ft. at 1200 r.p.m. These were direct connected by means of flexible couplings to 100-hp. motors, and so designed as to operate at any angle up to 40 deg. from

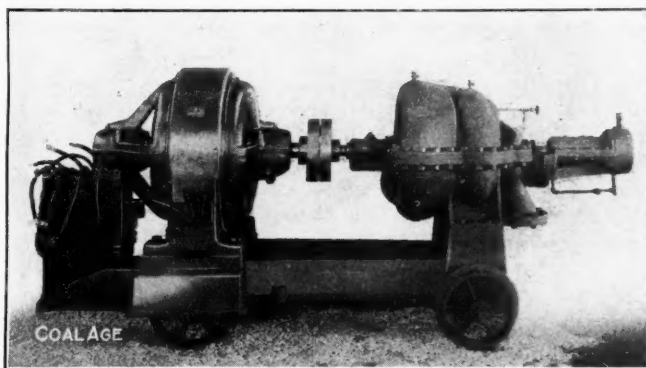


FIG. 1. THE PUMPING UNIT EMPLOYED

the horizontal, with pump end down the slope. The pump builder assumed responsibility for the pump thrust and the motor builder responsibility for the motor thrust.

A shelf to carry the compensator was cast integral with the bedplate and the axles were bolted to the bedplate with U-bolts. To the motor end of the bedplate a heavy hitching staple was securely bolted.

To overcome variation in the angle of inclination, a flexible joint was placed next to the suction elbow and to this was fastened, by means of flange unions, a length of 8-in. wrought pipe, on the end of which the foot valve

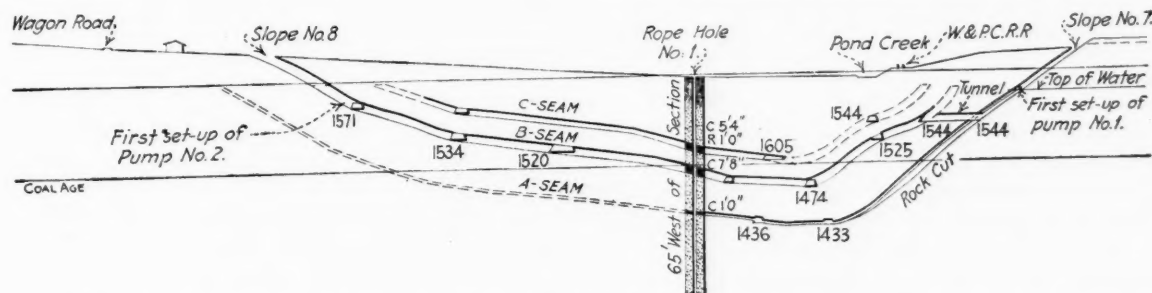


FIG. 2. CROSS-SECTION OF THE MINE, SHOWING SUCCESSIVE POSITIONS OF EACH PUMP

On the property were two single-track slopes, one in the "A" or lower vein, driven on the south dip for a distance of 400 ft. to the basin, on an angle varying from 25° to 40°; and one in the "B" vein on the north dip, for a distance of 700 ft. to the basin, at an angle varying from 15° to 27°. Both veins were connected by a tunnel through the intervening strata at an elevation approximately 100 ft. above the basin of the lower or "A" vein; the water standing at a point about 40 ft. vertically below the mouth of the slope. The total head from the basin of the lower or "A" vein was 225 ft. In the "A" vein slope

and strainer were placed. To support the weight of the suction pipe, a small skeleton steel truck, to which this pipe was clamped, was so placed that the weight was properly distributed and strain removed from the pump.

On the discharge end was placed in the order named; an elbow, a valve, an 8-in. wrought-iron pipe, a flexible joint and an 8-in. wood pipe to the surface.

Hoisting equipment having been installed while the transmission line was being constructed, one pump was located in each slope (see Fig. 2) and secured to the hoisting rope and lowered by means of a hoist as the water receded, the suction and discharge pipes being lowered with each pump, extensions to the discharge line being

*Harleigh-Brookside Coal Co., Hazleton, Penn.

put on at the surface. As the compensator was mounted on the bedplate, it was necessary to connect only three wires at each move, this being accomplished readily by the use of tube couplings.

Owing to a deflection of $\frac{1}{16}$ in. in the bedplate, some difficulty was encountered on the first set-up, on account of the inboard bearing heating, but on subsequent set-ups this was entirely overcome by removing the bolts from the coupling connecting the pump to the motor, and carefully leveling the unit by means of wood wedges inserted between the rail and the bedplate, then replacing the coupling bolts.

Eight men were employed in moving pumps, and as many as four moves per day (two for each pump) were sometimes made; the record move having been made in one hour from the time pump was stopped until it was again pumping to the surface. In no instance did re-locating require more than three hours, this time being due to meeting obstructions in the slope. The property was entirely unwatered in 30 days.

John Wesley Boileau

Apparently disheartened by the prospect of becoming a hopeless invalid, John Wesley Boileau, a wealthy coal operator and club man of Pittsburgh, Penn., committed suicide by shooting with a heavy revolver on Oct. 7. About ten minutes prior to his death he had informed his wife that he contemplated such a deed. She secured possession of his revolver, and while carrying it to another room for safe keeping, heard the report of another weapon, Mr. Boileau having quite a collection of firearms in his own room.

Mr. Boileau was among the men who have been concerned with the development upon a large scale of the coal-producing fields of western Pennsylvania and West Virginia. Into this work he put a thorough knowledge of science, economics and commercial conditions. He was a profound student of coal-region geology, of the engineering problems involved in coal development, and of the business situation affecting sales of coal properties. So thorough was his knowledge of these matters that he was regarded as an authority by engineers, operators and investors alike.

Mr. Boileau was born Oct. 25, 1873, in Athens County, Ohio. He received his early training in the public schools of Morgan County, Ohio, but has been, throughout his entire life, a zealous student along lines equally scientific and practical.

In 1892, he took a position as clerk in a store, but soon left this to become a teacher, later becoming principal in the schools of Westmoreland County, Penn. In 1895, he took up engineering and contract work, in which he continued to engage for three years. In the meantime, however, he became interested in the coal-land business, and from 1897 onward specialized in this field.

He studied carefully every phase of the coal situation and the problems surrounding the development and sale of coal properties. The scope of his experience, the wealth of scientific knowledge which was his, and his keen sense of values, gained him recognition as an expert in his line of business. He has negotiated several of the largest sales of coal land both to investment and operating organizations that were ever consummated during recent years in western Pennsylvania and West Virginia.

He was also identified with various coal and coke enterprises, being an officer and director of many such companies operating throughout western Pennsylvania.

Mr. Boileau had been suffering from ill health following a nervous breakdown for about a year. About a week before his death, he had a fall down the steps of his residence, striking his temple heavily, which rendered him

for some time powerless to move. Since that time he complained continually of a pain in his head, until finally he apparently became possessed with the idea that he could never recover.

Mr. Boileau is survived by his wife, one daughter, and one son, John Wesley Boileau, Jr., also his parents, one brother and one sister.

With Mr. Boileau, the City of Pittsburgh loses a valuable and respected citizen, while the coal industry



JOHN W. BOILEAU

in general suffers the loss of one of the men who has done much to bring the industry to its present status. It was largely through his untiring efforts and influence that the City of Pittsburgh secured the testing station of the Bureau of Mines.

The Meeting of the American Institute of Mining Engineers

The meeting of the American Institute of Mining Engineers at Pittsburgh on Sept. 8, 9 and 10 was a great success, over 200 members being present. The Institute should be a powerful instrument for good in the coal, coke and petroleum fields, but for years it has been lamentably weak in all.

At the experimental mine a test was made of the Rice barriers, and they proved their value under the conditions to which they were exposed. Exhibits of their mode of action were shown outside the mine, and the visitors watched a cement-gun operator coating a surface with "gunite" reinforced by wire netting, and also inspected the recently completed work of the gun underground.

On the last day a visit was made to the Bureau of Mines where some interesting demonstrations were made, somewhat similar to those shown the Coal Mining Institute of America at its last visit. Next week we hope to give a full account of the meeting.

Editorials

Small Potatoes

In the issue of Oct. 3, we published a letter from Geo. N. Lantz of New Straitsville, Ohio, on the situation in the coal fields of that state. It seems extremely logical. Hardly anything could be more convincing than his italicized words that: Equal labor demands equal compensation. We hesitate to differ with him. It is hard to place against his moral maxim, a stern economic truth. But here we write a more correct doctrine with a manifest disregard for the good will of those who term economics a heresy. The dictum runs thus: Wherever products are competitive and enter the market on equal terms, equal labor can demand equal compensation only when the products of equal labors are themselves equal.

We will for purposes of illustration imagine a miner's wife in colloquy with a farmer who is trying to sell potatoes. "Shure, thim p'raties aren't near as big as Thompson's and yer price is just as big. When you've peeled your p'raties there'd be nothin' left but the skins!" The farmer has a ready reply, "I have to work just as hard as Thompson to raise those potatoes and it ain't my fault if they're smaller." "Shure," says the good wife, "but it's p'raties I'm buyin', not yer labor. Maybe it ain't your fault thim taters is small, maybe it is, but they're small all the same, an' I'll have none of thim, so yer can carry 'em to Mrs. Smith or the company store."

It is clear that the farmer must take a lower price than Thompson because his potatoes are less well nourished or a poorer variety. The market is not for his labor, his efforts, his soil fertility, not for anything but for his product and the reward of his labors depends not on his exertions but on what his basket reveals when he removes the burlap. That is the test the miner's wife imposes on his potatoes. The test of her husband's product is no less searching. If his coal contains large quantities of slack, whether he is to blame or not, the whole product cannot sell for as much and there cannot be as much profit in his labor.

Fortunately where the fine coal does not result from the miner's own carelessness, it is usually the outcome of the softness of the coal and accordingly it is frequently the case that the coal which makes the most slack is truly the easiest to mine and the scale which pays attention to the proportion of slack is therefore as morally defensible as it is economically sound.

We object to putting morality against economy for what is economical is usually moral. Surely no man would have a moral right to do work for which he is economically unfitted nor has any man any right to be utilizing material really unsuited for economic use if he makes the public pay for his misjudgment. There is every need that the economic law shall arrest the hand of the man who chooses to produce an inferior article at an excessive cost.

Ohio is paying a high wage scale; the miners, however, by reason of unsteady work are getting lower pay than in almost any state in the Union. So the miners are not

profiting. Concurrently, the coal mines of Ohio were only mining 8 per cent. more coal in 1912 than 1907 whereas in the rest of the United States the increase in the output of bituminous coal in that time was 14 per cent. Clearly the Ohio operators were not giving any evidences of prosperity. The Ohio scale pays neither operators nor men.

The wage scale of Ohio has made the state backward in conversation, negligent of first aid, indifferent as to housing and largely unprogressive. If eastern Ohio finally settles down to the 4½c. rate for machine-mined coal now demanded, there will still be mining, but the sales will be restricted to a smaller area and work will be intermittent and uncertain. For after all, the moral right to equal pay for equal labor is not recognized by the consumer; the right which appeals to him is equal price for equal product and no other cry appears to have merit.

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The American Hermit

The efforts of our papers to boost "Made in America" goods might be looked upon as a distressing manifestation of narrowness had not Englishmen and Germans already shown us the way. It is up to us to have the manhood and the economic sense not to follow their mistaken lead.

Let us bring before our minds the man we really respect. Is he a man who is entirely self-sufficing, who fusses around day by day, doing his own chores, making his own clothes and procuring his sustenance from his own garden patch? Or is he a man who doing one thing or one class of things transcendently well, casts aside all other ends and attends only to such matters as suits his genius and his training best? Is the model of our life, in short, the hermit or the captain of industry?

The most profitable work of the nations of the world is that which they can do best, for which the peculiar conditions of the country fit them. They advance themselves most by performing the largest services. A nation with superlative advantages, such as we may well claim as ours, is foolish to endeavor to enter into competition with foreign countries wherever the struggle is merely equal. Of course, it must be understood that the question of equality will take into consideration transportation as well as production elements as they affect the problem.

Much of the aggressive nationalistic sentiment has, of course, not been unfortunate and it has merely caused the United States to acclimatize trade which should be normally ours. It has sometimes, however, put us in the ambiguous position of a one-armed man who enters himself in a baseball team just to show he is an all-around athlete. But such a desire to outshine in everything is merely vain glorious and the aim of our citizens should always be to seek the fittest trades for America rather than to absorb all trades whether suitable, merely sustainable or wholly unfitted to our conditions.

But those who urge us to be self-sustaining also want us to enter the world's markets, and such trade may be easily proved to be un-American if we accept the specious dicta of those same advocates of a self-sustaining America, for how can we sell goods without accepting any return?

To return to common sense: There is a demand in the United States for the expenditure of capital in many ways where the need for it is most evident and pressing. There are glaring inefficiencies right and left which have existed only because our products have in the past been so cheaply secured that we could afford to be lavish in their use. Where these inefficiencies can be removed and the removal pay good dividends, the capital should be forthcoming to permit it.

Then there are a number of trades which might profitably be established here which so far have not taken root. If they are well fitted for our conditions and can continue existence without subsidies, they should be established even if for a time they need protection and other governmental support. But to bolster up industries economically unfitted to our country is to withdraw capital from those purposes which have a better right to existence and have an equal need of financial support.

The "Made in England" and the "British to the Backbone" campaign has created no few enemies for England in Germany and elsewhere and has probably done absolutely no good because the nation is best served which buys always in the cheapest market and sells in the highest.

Anyone who has traveled around our coal mines will realize that an immense amount of capital is needed to make them economical in operation. Everyone also knows that the coal when it arrives at the market is largely wasted by inefficient use. Plants at the mine and the factory are both too often flimsy structures liable to fire. Money could be better spent in making the changes these conditions indicate than in attempting to build up certain mineral industries which must always be dominated by those abroad or to coax specific products from the soil to which neither our climate nor our fields are fitted.

Selling "Duty" Instead of Coal

There seems a lamentable lack of comprehension of the opportunities existing, exhibited by those operators whose mines are adjacent to brick and other clay-product yards and like industrial enterprises. In most cases brick kilns are heated by grates set around the periphery of each kiln. These openings are extremely weakening, and need constant replacement. Their removal would make for economy.

But the principal objection to their continued use as sources of heat are that they must be fired not with the cheapest kind of slack or refuse, but with run-of-mine coal. As a result the operator who should be helped by the presence of brick yards finds that they demand the same product which is needed for domestic trade. This condition of affairs is desirable neither for operator nor for clay-product manufacturer.

Another difficulty is that the clay-product man has to haul all the coal so used some thousands of feet and to distribute it in untidy little piles around his kilns, where it is often in the way of the wheelers, and, worse yet, it all has to be shoveled so that the kiln tender's work becomes one of drudgery. This drudgery removed, more skilled men could be obtained to do the work with resultant improvement of product.

How much better it would be if we were to generate heated gases at the mines with self-stoking grates, using slack or impure coal and lead some of these gases to the brick kilns and others to the boilers of the coal company's plant. There is no reason why a coal corporation should not provide the heat needed for the kilns at a certain stated figure, say the same rate as that hitherto paid by the clay-working company for coal at the mine. The gain to the clay worker would be derived from the saving in the haulage of the coal, in the cartage of the ashes, in the order of his yard, in the improvement of his kilns, in the reliability of his heat, in the saving of stoking labor and in use of the heat under his own boilers.

The Galena Signal Oil Co. has found it profitable to sell oil not in bulk but on performance. We believe coal can be sold somewhat on the same basis, and to even better advantage, by converting the stored heat of the coal into heated gases before delivery to the consumer.

Pittsburgh-Buffalo Company in Trouble

The Union Trust Company of Pittsburgh proposes to foreclose on the Pittsburgh-Buffalo Company. This will mean that John H. Jones, president and largest stockholder of the P-B Co., will be subjected to the greatest misfortune of his life. He has fought his way up in the coal business, from a humble position in the mines as a lad of ten to the top of the heap, and there is not a man who knows John Jones, but regrets the situation which now faces him.

Mr. Jones is not the kind of man who craves sympathy. He has conducted his own fights in his own way, always observing the rules of the game. However, it does appear to us that the Pittsburgh bankers might be more lenient in their demands on the Pittsburgh-Buffalo Company. Surely the present is not the time to tear down our business structures, if there is the slightest possibility of their weathering the depression created by a world war.

To attempt to sell a coal property now is surely unwise, for no company today could realize anything like a fair price for its holdings. If the Pittsburgh-Buffalo Company is disposed of before conditions have again become normal, the result will be a serious loss to the unsecured creditors.

Mr. Jones and his associates have promised, that if necessary to the full settlement of the company's debts, they will promptly assign their equities in the properties to a syndicate representing the stronger creditors, providing, of course, that the latter will protect those who cannot protect themselves.

Careful investigation by Dr. I. C. White and other prominent engineers discloses that the properties of the Pittsburgh-Buffalo Company are worth several times the debt the company owes. The coal business will improve rapidly when the European trouble is settled and the mines of Mr. Jones and his associates will not only settle their obligations but will pay a handsome return in interest to those who have had faith in them.

We need men like John H. Jones in the coal industry, and we earnestly hope the Union Trust Company officials will accord him a full opportunity to carry his work to a successful conclusion. Whatever the outcome of the present trouble, we predict that Mr. Jones will eventually surmount all obstacles in his path, and will win in spite of every handicap fate may temporarily place in his way.

The Labor Situation

SYNOPSIS—The executive officials of the U. M. W. of A. write the President that if the truce agreement is to be modified for the benefit of the operators, they also desire to make changes in it. The mayor and sheriff in Butte, Mont., have been removed for not protecting the Western Federation of Labor from the violence of the Industrial Workers of the World.

The United Mine Workers of America, through the president, secretary-treasurer and vice-president, have written to the President of the United States, protesting that if the operators are permitted to change the terms of truce, they also should be allowed to make modifications suited to their needs. They are justified, of course, in saying that their approval was accorded to the instrument just as it was presented to them, and in no other form, but their letter, in which they refuse to be bound by a modified form of it, is unnecessary, and even ridiculous.

But we must commend the operators for demanding that assurances be given them that there will be peace when the military forces are withdrawn and that the concessions they are required to make shall be reasonable. Their absolute right to protection from violence, for which they are now pleading with an autocratic President, should not be purchased at a high and arbitrary price set by a commission one of the two members of which has been employed to stir up strife against them. The operators most reasonably object to the figure at which they are to be ransomed from the violence of the agitators, especially as they are almost sure that even compliance will not assure safety.

The Miners' Statement

We publish below the statement of the miners:

We have learned through the press reports and otherwise, that the coal operators of Colorado have asked for certain modifications of the basis for a three-year truce of the mining trouble in Colorado, recently proposed by you.

Our acceptance of your proposal was based upon the assumption that it would likewise be agreed to without change by the coal operators.

There are certain features of the agreement which we, too, would like to have modified or changed. We did not ask for this because we felt that the occasion required full compliance with your very earnest wish. Our position now remains the same as when we forwarded you our letter of acceptance. We are willing to abide by the proposed basis of adjustment submitted by you.

If, however, there are to be modifications of any sections of the proposed basis in order to meet the requirements of the coal operators of Colorado, then we, too, ask the privilege of requesting a change in certain sections thereof.

We ask, in the event of any change, that we be given the opportunity of presenting our objections to certain features contained therein with a view to having them changed or eliminated altogether.

We repeat our acceptance of your proposed basis of settlement without change, providing only that the same will be agreed to by the coal operators of Colorado in like manner.

The quiet now pervading Colorado may perhaps make people think that the withdrawal of the troops will not cause violence. But there is no reason for such assurance while the men who have caused it before still remain on the ground, and, by the terms proposed, are assured of a place in the mines if the slowly acting courts do not intervene and exempt them from employment by declaring their criminality. Early in September, Roy Faddyoff, a private in Troop L, 11th United States Cavalry, was killed and his mangled body was found on the Denver & Rio Grande R.R. tracks. It is thought that he was attacked by strikers and killed while on guard, but, so far as we know, no one has yet been apprehended.

According to later reports, the President is intending to remove the United States troops as soon as the state militia is ready to replace them. We hope he will make provision of this sort, and will, moreover, first assure himself that the strength and financial support of the militia is adequate for a long campaign.

Contrast Between Conditions in Montana and Colorado

As a result of the recent rioting, the operators of the copper mines at Butte, Mont., have decided to operate their mines open shop. So the Western Federation of Miners is about to be beaten again, and as this defeat follows its surrender at Calumet, Mich., the affiliation of the W. F. of M. with the United Mine Workers of America will be of no great benefit to that body.

It is interesting to note how different has been the action

of the militia in Montana to that in Colorado. The soldiers in Butte have most methodically cleaned up the town, and their drastic action is due, we think, wholly to the fact that they have the union men in full sympathy with their aims. For far less activity in Colorado, General Chase was condemned in most unsparing language. So far from withdrawing United States troops before complete pacification, the administration, without even being asked for assistance, as prescribed by the constitution, moved federal troops to Fort William Henry Harrison, near Helena, Mont., from Fort Wright, Wash., so as to be prepared for every eventuality.

Ohio, Still Quiet, Hopes for Colorado Settlement

Quiet reigned in all of the mining districts of the Buckeye State during the past week. No moves have been made by either side of the controversy in eastern Ohio towards renewing scale conferences. The operators are content to leave matters rest as they are, and the miners are not yet disposed to sign up on the proposition of the operators, which is 44.61c. for machine-mined coal on the mine-run basis. This is the same as the Pittsburgh scale. It is claimed that many of the rank and file of the miners' organization would be willing to sign up on that proposition, but they are prevented by the union officials and the policy committee.

William Green, secretary-treasurer of the national organization, visited eastern Ohio last week in a reported effort to borrow money with which to pay further benefits to the striking miners. Some benefits have been paid recently in store orders, and these have caused some dissatisfaction among the men, as they would prefer money. The difficulty in financing the strike will continue until the day when the Colorado troubles come to an end.

No developments of consequence have taken place in the Coshocton field, where the men are still out.

The Ohio Industrial Commission reports everything quiet in the fields where mines are in operation. The commission has not been called upon recently to make any special rulings as to the percentage of slack or the percentage of impurities allowable.

It is rumored that Industrial Workers of the World forces are again preparing to invade the eastern Ohio coal district, although their efforts at agitation among the striking miners were unsuccessful during the summer. The agitators believe that the situation is more favorable to their efforts, for the men have been longer away from the mines, and an appeal to disorder now will be more effective than at the beginning of the strike.

The Southwestern Coal Fields

A condition of peace prevails throughout the Southwestern coal fields; not a single strike is now in progress, and such minor troubles as arise are being straightened out with celerity. J. B. White, president of the United Mine Workers of America, who was in conference in Kansas City, Oct. 8, with officials of the operators' associations, in reference to contract matters, expressed himself as well satisfied with the outlook. Mr. White has in recent cases of complaints taken immediate steps to get the men to return to work, and they have responded quickly. The result of inquiries has disclosed that the shutdowns have been caused by misapprehensions, which are removed by a better understanding of the contracts.

W. L. A. Johnson, commissioner of the Southwestern Operators' Association, returned recently from Fort Smith and McAlester meetings, where he assisted in the organization of joint boards, one each for the states of Arkansas and Oklahoma. He reports conditions are very satisfactory.

Validity of Labor Organization

The Hitchman Coal & Coke Co., on behalf of the West Virginia coal operators, desired the Supreme Court, on Oct. 13, to review the action of the Fourth United States Court of Appeals, reversing the decision of Judge Dayton, who ruled that the United Mine Workers of America was an unlawful organization.

Judge Dayton, in the Federal District Court, enjoined W. B. Wilson, the present secretary of labor, and other officials of the United Mine Workers of America from attempting to unionize the mines of the Hitchman Coal & Coke Co. The labor leaders have endeavored to have Judge Dayton impeached.

The coal company has no absolute right to the review desired, but asks the court to exercise its discretion and grant the reopening of the case in recognition of the importance of the question involved.

Sociological Department

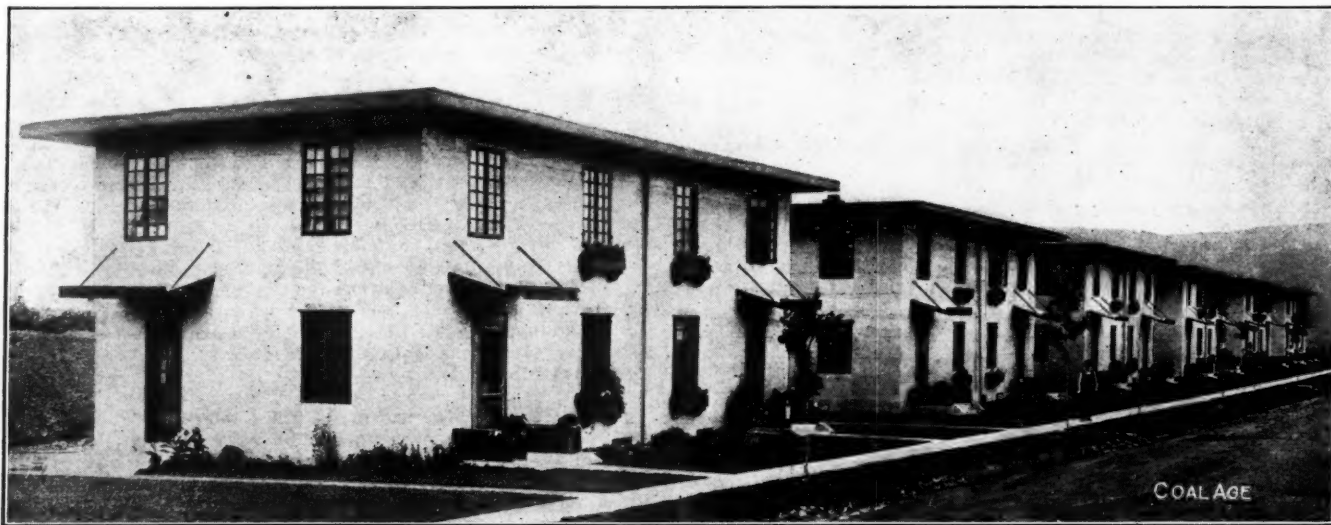
Concrete City in Bloom

Flowers of all colors are blooming in the flower pots around the trim houses of "Concrete City," the Delaware, Lackawanna & Western's model village near its big Truesdale Colliery. They are blooming too in the first and second story window boxes, and last month two officials of the company awarded first, second, third and fourth cash prizes for the best and neatest gardens and grounds.

John P. Evans carried off the first prize of \$10, John Allen drew \$5 for second prize, John Martin \$3 for third

stantly flowing water has been installed in one corner of the big central square, and on hot afternoons many of the children, some in improvised swimming costumes and some with the alarming lack of them that characterizes New York newsboys when they make a surreptitious dash into the fountain in City Hall Park, disport themselves in safety in its shallow waters, for there are between eighty and ninety children in "Concrete City."

The village was started last summer and was described at length with illustrations in COAL AGE, in Vol. 3, pp.



A STREET IN CONCRETE CITY

prize, David J. Thomas \$2 for fourth prize, and Benjamin Isaac secured honorable mention. But it was not so much the value of the prizes as the value of the improvement to their surroundings that made practically every householder in "Concrete City" enter the competition.

THE NEW SWIMMING POOL

And this was not the only improvement in "Concrete City" this summer. A circular swimming pool with con-

851-854. Twenty double houses were constructed around a big central square 300x410 ft. They are two-story structures 50x25, with flat roofs, dark green trimmings and little red chimneys which make an agreeable spot of color. The houses are practically of solid concrete, molded in one piece, after the idea of Thomas A. Edison, but built according to another man's patented adaptation of Mr. Edison's idea. Floors, walls, ceilings, stairways, even sinks and wash basins, are made in a mold of



A PRIZE WINNER AT THE RECENT CONTEST



A YARD WHICH RECEIVED HONORABLE MENTION

"poured" concrete. The construction is such that, on occasion, the furniture may be removed and an entire house thoroughly washed out with a hose.

Each house contains eight rooms, and has stationary wash tubs, a buttry and a good dry cellar. The concrete is slow to heat, and the houses are as cool in summer as they are warm and dry in winter. Special precautions have been taken to prevent dampness. Little marquees supported by chains overhang the front steps, which have flower boxes on each side. A complete sewage system has been installed, and the square is bounded by shade trees and concrete walks which also lead to the front and side doors of the houses. The whole city is surrounded by a stout wire fence.

MANY FACILITIES AND CHEAP RENTS

There is much kindly humanity in the forethought which was expended on the interior fittings of the houses. Wooden strips are imbedded in the concrete floors so that carpets may be tacked down. Below the French windows, opening outward, window boxes for flowers are set

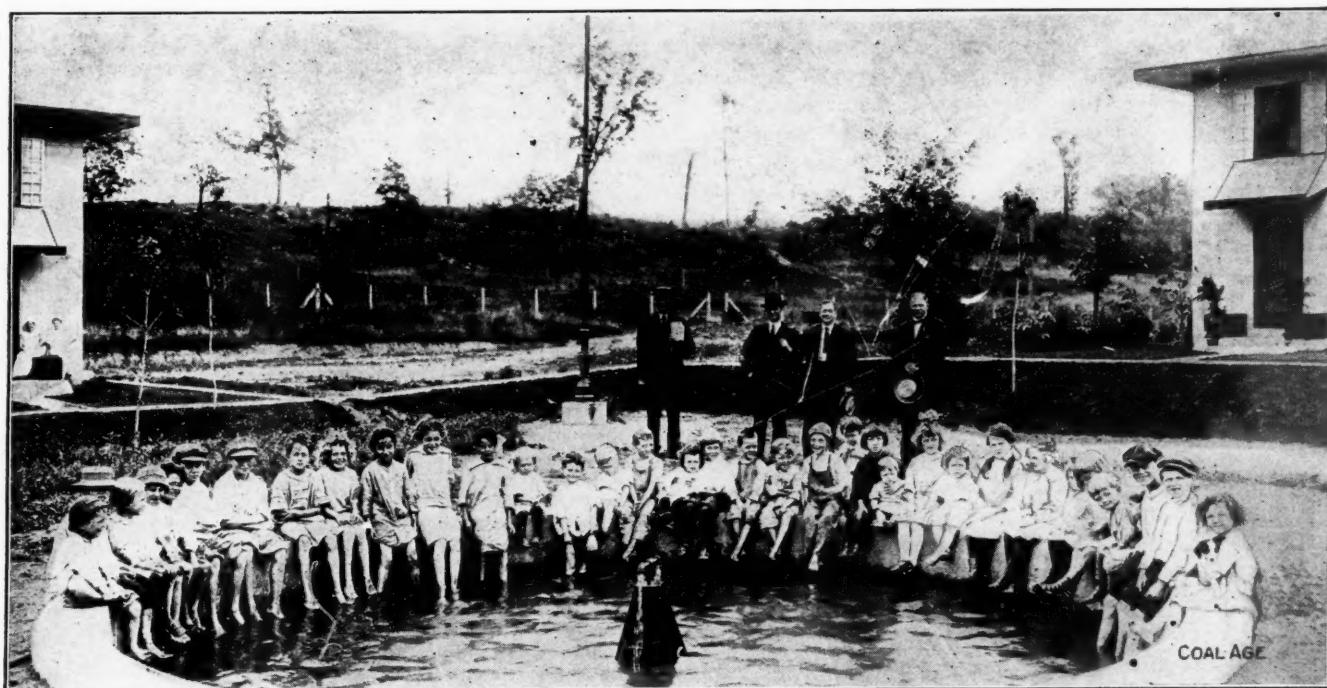
HOW IT PAYS THE COMPANY

The man in the best position to judge of the value of this model village is the foreman of the Truesdale Colliery, where the dwellers in "Concrete City" are employed. When asked if he thought it was a good investment, he replied:

"If all the people working at Truesdale were like the people living in those houses, it would be much easier for me. Labor which has to come here by an early morning work train is much harder to handle. The houses attract the better class of miners who live in them happily and contentedly. We rent them at such a cost that we make no financial profit, but I wish I had a hundred more of them."

Additional Men for the Rescue Stations

The Mine Rescue Station Commission of the State of Illinois, at its meeting at Springfield, Sept. 25, authorized the Manager, Oscar Cartlidge, to make arrangements



THE CHILDREN'S PADDLING POOL

in the walls. Window openings are generous, and there is plenty of light. The window and door frames and the doors themselves are of wood. There is ample space behind each house for a truck garden, and space in the cellar to keep a supply of coal.

The rent of these houses is \$8 a month for single houses, and \$16 for the two halves, or a double house. After the cost of administration, taxes, upkeep and improvements on the property such as sewers, grading, concrete walks and shade trees are paid, the income from it amounts to about 31½% on the investment. That the mine workers are not unappreciative is shown by the remark of a miner's wife:

"I paid \$12 a month for a house not half as good as this over in Pottsville," she said. "The children are healthier here, the house is perfectly dry and cool, and it is easy to keep clean."

with five additional men at each station—LaSalle, Springfield and Benton—to take training in mine-rescue and first-aid work not less than one hour a week at 50c. per hour, with a minimum of \$1 per week compensation. While actually engaged in fire fighting and rescue work, the compensation of these men will be \$1 per hour.

The men selected for this work must submit to a thorough examination by a physician, and agree in writing to respond to a call from the station at any time, day or night.

This resolution contemplated that each of the station superintendents and assistants should keep in training with their men, and be fit at all times to organize and lead their teams in recovery work. In this way, the Commission expects to be able to offer to the mining interests of the state the most thoroughly organized and efficient of rescue teams.

Discussion By Readers

Method of Working Underlying Coal Seam

Letter No. 4—In reply to the inquiry of G. E. Lyman, COAL AGE, Aug. 29, p. 357, I would say that there need be no fear of serious trouble arising from the overlying abandoned seams in this case, unless the abandoned workings contain a considerable accumulation of water or gas.

I agree with Mr. Lyman's suggestion that the best method to adopt is the retreating system, for mining the coal in the lower seam. The retreating system is, of course, expensive at the start; but, in the long run, it is by far the cheapest method to employ. It may often be necessary, however, owing to a limited capital, to consider the high first cost and to adopt a method that will allow quicker returns on the investment. With the exception of the longwall method of mining, which I do not consider practical in this case, the retreating system will produce more coal to the acre than any other system.

Assuming that the seam is level, I would adopt the double-entry system of mining, and split the air for each pair of crossheadings if there is much gas present. All headings and rooms should be driven on sights, so that the pillars left between them will be of a uniform thickness. When drawing back the pillars between the rooms, the inside ones should be kept, say from 10 to 20 ft. in advance of the next pillar outby. The work should be so arranged that before each pillar is drawn back to the heading, the corresponding pillar on the next pair of entries should be started. By this means, there will be less danger of coal being lost.

With proper care in the setting of posts in regular rows and a uniform distance apart, much timber can be saved. The number of rows at the face and the distance of the timbers apart will depend on the nature of the roof; but there should never be more than from four to six rows of posts, at the most. Great care is necessary in the drawing of timber, in pillar work, to insure the greatest safety. I would suggest that the fireclay underlying this coal can be utilized to advantage for the making of good brick.

It is possible that, as the work nears completion and the mine is soon to be abandoned, it will be an advantage financially to double-shift the work, so as to shorten the time during which there will be an ever increasing expense and a decreasing output of coal.

GEO. T. MAIN.

Republic, Ala.

The Practical Working of the Mine-Run System

Referring to the recent discussion of the working of the mine-run law in Ohio, the following sample letters will be of interest as illustrating some of the difficulties encountered in operating under this law and making the change from the screen-coal to the mine-run basis of weights and payments. Most of our mines have already

experienced the problems discussed in these letters, the most of which are actual copies with the omission of the names of the parties sending and receiving the same:

Mr. _____, Weighmaster,
_____, Ohio.

Dear Sir:

For your information, we submit the following figures:

Mine weights as shown by your sheets for the month of July, total, 29,894 tons.

Railroad weights for July, 29,260 tons.

You will note that the difference of 634 tons, between these weights, is a dead loss to us; and, at the present state of the market, represents a deficit of \$570.60. It is needless to say that we would consider this amount a good profit on the coal. We cannot understand why a difference of this magnitude should exist and ask that you do your best to reduce or cut out this difference, in the coming month. Please do not misunderstand us; we only ask that you weigh the coal as closely as possible.

_____, Fuel Co.,
Per _____, Sec'y.

Another letter reads as follows:

Mr. _____, Sec'y.,
_____, Fuel Co.,
_____, Ohio.

Dear Sir:

I am in receipt of your letter regarding the difference between mine and railroad weights for July. I beg to submit the following as a few of the possible reasons why a difference of greater or less magnitude should exist between the weigh sheets and the railroad weights:

1. Boney coal thrown out and not docked.
2. Coal used for fuel for boilers.
3. Coal lost in transit, or shrinkage due to the drying out of the coal on exposure to the air.
4. Low estimated average on mine cars.
5. Defective mine or railroad scales.

In reference to these possible causes, permit me to state the following:

1. The entire force of coal trimmers works every Sunday, cleaning up tracks and removing unsalable coal thrown out during the week. It is estimated that the amount of coal thus discarded by the trimmers will average 30 tons per week. As the miner is not docked for less than 100 lb. of dirty coal, it is apparent that much of the coal thrown out will not show on the weigh sheet. I estimate the coal thrown out and appearing on the weigh sheet will not average over one-half ton daily; or, say 3 tons a week.

2. The coal used for the boilers amounts to two or three cars each day. The exact weight of this coal will be found in the upper right-hand corner of the sheet. It may be that no allowance has been made for this coal, which would considerably reduce the shortage.

3. The shrinkage of coal in transit is due to two causes: (a) Loss due to the drying out of the coal, which is not inconsiderable. (b) Loss due to robbing, which will depend on the number of families on good terms with the trainmen; and the occasional robbing of cars for engine use or pumping stations.

4. In the present case, the shortage cannot be due to a low average on mine cars. This average was taken from cars that had been standing in the mine throughout the suspension and were heavier than cars in daily use. This average was so high that the checkweighman insisted on a new average being taken recently, which reduced it from 1830 to 1742 lb.

5. It is our custom to test the mine scales frequently, and these are invariably found to be correct. The matter of the correctness of the railroad scales is merely suggested.

We hope to reduce the shortage this month, in respect to the first three causes mentioned; but as to the rest I can suggest no remedy. I do not understand that you request any juggling of the scales to make the mine weights correspond more closely with the railroad weights; and to employ such a means would be foreign to my desire. I want to give a fair just weight both to the miner and to the company.

_____, Weighmaster.

In connection with this correspondence, it is worthy of note that, under the screen-coal basis, the percentage of loss was estimated on the railroad weights, which procedure would not reveal the losses from the first three causes mentioned in the letter. It is possible that working on the mine-run basis, operators will need to figure on a larger percentage of loss, because it is not possible to entirely eliminate these causes.

The reply to the last letter, above, reads as follows:

Mr. ———, Weighmaster,
———, Ohio.

Dear Sir:

After carefully considering the items mentioned in your last letter, I have been able to account for 365 tons of the shortage previously named. This still leaves a shortage of 269 tons. Referring to your suggestion as to "juggling the weights," I have no such desire nor would I consent to such a proceeding that would mistreat the miner. What I desire is a correct weighing of the coal and the reducing of the shortage mentioned, as far as this is possible.

———, Sec'y
——— Fuel Co.

Another letter reads as follows:

Mr. ———, Sec'y.,
——— Fuel Co.,
———, Ohio.

Dear Sir:

Referring to our previous correspondence in regard to coal shortage, I have been carefully going over the entire matter and believe that I have discovered what may be a large source of error and loss. In examining closely a few of the empty trips, before they were taken back into the mine, I discovered that a considerable amount of coal was left in many of the cars. I have drawn the attention of the dumper to this fact, and he admits that he has been careless in the matter. In the future, greater care will be exercised in dumping the cars, and a close watch will be kept of the empty trips to see that all the coal has been dumped. I believe that this will eliminate much of the trouble in the future.

I will be glad to have you mail me the mine and railroad sheets for the last month, so that I can compare these and see what progress we are making in reducing our shortage.

I am also endeavoring to ascertain how closely we are loading the cars to capacity, and am keeping a daily record of the capacity of all cars loaded, together with my tonnage. I would like to know what percentage of overweight is reported on these cars.

———, Weighmaster.

The above letters show a persistent and determined effort on the part of the weighmaster to reduce the reported shortage of coal between the weigh sheets and the railroad sheets. It is not strange to find that the July shortage of 634 tons, which was later corrected to 269 tons, was reduced in August to 142 tons; and, further, that the September report showed only a shortage of 28 tons, which was considered as a satisfactory record.

A MINE SUPERINTENDENT.

———, Ohio.

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The Foreigner in Mining

Letter No. 6—If the remarks of I. C. Parfitt, COAL AGE, Sept. 12, p. 440, were true, the coal operators of eastern Ohio would have to close their mines. I have faith to believe, however, that this is far from being the case. If it were true that a protracted stage of adolescence was necessary for the development of a foreign miner, the coal industry would not have shown the growth and prosperity that has marked recent years.

Looking backward from our present viewpoint that makes a fair perspective possible, it seems to me that these foreigners have shown great adaptability and made wonderful progress in learning the language, customs and

habits of the American people and the methods employed in coal mining. In may be true, in isolated cases, that foreigners do so "regard liberty as unrestricted freedom for the indulgence of the animal propensities of primeval man." But, if this were true, generally, it would not be possible for me to sit here and write these lines, while hundreds of such a class of beings were all about me.

Further, at our mines, 2 miles away, equipped with large tipples, expensive power plants, five locomotives, fifteen machines, pumps, fans, mules, etc., etc., not a thing has been touched; and watching has cost us less than \$50 per month. To my knowledge there has not been a gun on the premises, since Apr. 1 of this year. Again, during the strike of nearly six months, with over 10,000 of these foreigners, hereabout, there has not been a single violent death and very little violence of any kind whatsoever. Compare this, if you will, with newspaper files of 25 years ago, when Americans and English-speaking people predominated; and then say whether these dominant characteristics and this type of civilization cannot be easily assimilated.

It is true, also, that at the recent convention of operators and miners, at Wheeling, W. Va., these foreigners showed utter disrespect for their employers, and often shook the finger of scorn over them; until, finally, the mine owners decided to withdraw from the convention and submit their propositions to the miners. In the hotel lobby, the miners' attitude was charged to "the I. W. W.," to "state politics," to "labor leaders," etc., etc., but, I would ask, are these several influences actual causes, or are they the effects of conditions that have failed to properly develop and educate this class of labor.

These turbulent, irate, hard-headed foreigners were once smiling immigrants, courteous and easy to please. We may ask, "Has the coal-mine owner made the slightest effort, in many cases, to shape this raw material; and, if not, why should he be surprised to observe an abnormal growth among them. Has the mine owner, in many cases, interested himself in the welfare and surroundings of the foreigners in his employ? Has he shown any interest in them or made any attempt to understand them?"

Is it not a fact that, in many cases, the coal operator has regularly impressed *one* thing only upon his superintendent; namely, that the "cost sheet" was everything in the world worth consideration. As a result, in the large majority of cases, these men have been styled "hunks," "Dagoes," and designated by numbers to avoid even the trouble of learning their names. Whenever the mine boss has found the brusque manner and gruff voice, the easiest way to handle this class of labor, he has prepared the ground for the radical leader to sow his seeds of dissatisfaction; and the crop has been already all that could be expected. It will, now, be a herculean task to wrest the power from these leaders; but an educational campaign and an earnest attempt to improve the surroundings at the mines, backed by the personal touch of the owner, superintendent and foreman will eventually mold sentiment and pave the way to better results.

The minimum wage, shorter hours and other questions are coming; and if the operator expects even a respectful hearing he must do his part to cultivate a better sentiment among his foreign employees. Again, competition in the coal industry will soon cause efficient engineering to replace obsolete methods; and the foreman who depends upon a brusque manner and an extensive vocabulary will

be discounted by the one trained to handle electricity, mechanics, mining methods and human nature, successfully.

While trained men and improved methods are generally forging ahead, I know mining properties in eastern Ohio and elsewhere that have made no progress during the last 15 years. On these properties, one cannot find a labor-saving device or a machine designed later than 1900. A manufacturing concern could not follow such an example and live. Many coal-mine operators have been so engrossed in their sales department and other matters, that they have given no attention to the introduction of mining machines and other improvements; but have received the suggestions of a superintendent, in this regard, very much as the average farmer receives the proposals of a lightning-rod agent.

J. D. JONES, Supt.,
Glen's Run Coal Co.

Dillonvale, Ohio.

Letter No. 7—I have been deeply moved and profoundly impressed with the generous expressions that have marked nearly all of the letters of our mine foremen and superintendents, in respect to the attitude they advise and which they themselves are striving to maintain toward the ever-growing numbers of foreigners seeking

and finding employment in the coal mines of this country. Nothing presents a more hopeful aspect, and more certainly promises the ultimate triumph of successful mine management, over the present baneful influence of most so called "labor leaders," who are, in fact, widely recognized as "agitators"—trouble makers instead of peace makers.

No one denies the right, the legal and moral right, and the peculiar advantage to be gained by organization. Labor has the same right to organize as is accorded to employers of labor. Organization properly conducted and controlled is the foundation of successful industry. It must be recognized, however, by all members of organizations, that the free and unrestricted voice and will of the members is the guiding hand in every transaction. A so called leader is, in most cases, a disturbing element. Let men act on their own best judgment and give them freedom of expression; and the *get-together* spirit will eventually prevail and harmony take the place of discord.

To this end, let every mine superintendent and mine foreman "bubble over with the milk of human kindness" and lose the "brusque manner and extensive vocabulary" so often employed in dealing with the foreigner.

J. T. BEARD.

New York City.

Study Course in Coal Mining

By J. T. BEARD

The Coal Age Pocket Book

Action of a Reciprocating Pump—The piston or plunger of a reciprocating pump, by its movement to and fro in the pump cylinder or barrel, alternately fills and empties the same with water. By means of suitably arranged valves, the water that enters the cylinder by one port is entrapped by the closing of the valve over that port, and is then forced out through another port into the discharge pipe.

Piston Displacement, Theoretical Capacity—The space through which the piston moves represents the volume of water pumped, making no allowance for leakage or "slip-page." This volume is called the "piston displacement," and is reckoned in cubic feet per stroke, or per minute.

The piston displacement is the theoretical discharge of the pump or its "theoretical capacity," usually estimated in gallons per minute. The actual discharge is always less than the theoretical, owing to leakage of valves and packing, and the slip of water past the piston.

Efficiency of Pumps—In respect to the capacity of a pump to deliver water, its efficiency is the ratio of the actual discharge of the pump to its theoretical capacity. In all pumps driven by a motor or engine, this is called the efficiency of the "water-end." In good pumps, the water-end efficiency ranges from 80 to 85 per cent.

PUMPING CALCULATIONS

Let d = diameter of cylinder or plunger (in.);
 l = length of stroke (in.);
 n = number of strokes per minute;
 S = piston speed (ft. per min.);
 G = water pumped (gal. per min.).

| | | |
|-----------------------|------------------------------|----------------------|
| Piston speed, | $S = \frac{n l}{12}$ | (ft. per min.) |
| Piston displacement, | $\frac{0.7854 d^2 l}{1728}$ | (cu. ft. per stroke) |
| Piston displacement, | $\frac{0.7854 d^2 S}{144}$ | (cu. ft. per min.) |
| Theoretical capacity, | $\frac{0.7854 d^2 n l}{231}$ | (gal. per min.) |

Effective Head in Pumping—As previously mentioned, when a pump is in operation, the total effective head (h_1) is equal to the sum of the gravity head or vertical lift (h), the friction head (h_f) and the velocity head (h_v). Hence, adding these expressions (see Flow of Water in Pipes) and simplifying, we have as follows:

$$h_1 = h + \frac{G^2}{800 d^5} \left(\frac{h}{d} + 2.08 \right)$$

Whenever the diameter (d) of the column pipe, in inches, does not exceed its length in hundreds of feet, the velocity head can be ignored with slight error, which is less than 2 per cent. of the friction head; and the formula becomes:

$$h_1 = h + \frac{G^2 h}{800 d^5}$$

The Coal Age Pocket Book

Pressure Required in Pumping—In a direct-acting steam pump, the total pressure in the steam cylinder must equal the total pressure in the water cylinder.

Assuming, first, that the diameter of the steam cylinder is equal to that of the water cylinder or plunger, the pressure per square inch in the steam-end (p_s) must equal that in the water-end (p_w), the latter being calculated from the effective head (h_1). Hence,

$$p_s = p_w = 0.434 h_1$$

In order to avoid excessive steam pressures required for high lifts, it is necessary to increase the diameter of the steam cylinder so that its area will bear the same ratio to the area of the water cylinder or plunger, as the water pressure does to the desired steam pressure, which gives the following

Rule—The area ratio or the square of the diameter ratio is equal to the inverse pressure ratio. Or the diameter ratio is equal to the square root of the inverse pressure ratio.

Or, expressed as a formula, calling the diameters of the steam and water ends of a pump d_s and d_w , respectively, and the corresponding pressures p_s and p_w ,

$$\frac{p_s}{p_w} = \left(\frac{d_w}{d_s} \right)^2; \text{ or } \frac{d_s}{d_w} = \sqrt{\frac{p_w}{p_s}}$$

Horsepower Required in Pumping—The power required in pumping is estimated from the weight of water to be lifted a given height, in a given time, which gives the work to be performed, in foot-pounds per minute. A common rule is to assume that this effective work per minute is 60 per cent. of the required power of the pump. This rule is, however, only approximate.

The only safe method of calculating the power required to pump any number of gallons (G) of water per minute, to a given height (h), in feet, is to first calculate the effective head (h_1), and multiply this by the weight of water to be pumped per minute. The product obtained will be the foot-pounds of effective work required. To find the required horsepower of the pump, it is necessary to know the efficiency of the steam-end.

The efficiency of a pump, in respect to work, is the ratio of the work performed per unit of time to the power consumed. In other words, it is the ratio of output to input for any given period of time, or the mechanical efficiency of the system taken as a whole. The efficiency of the steam-end of a well designed direct-acting pump will range from 75 to 80 per cent.

Then, assuming an efficiency of, say 75 per cent. for the steam-end, divide the effective work by 0.75 to obtain the gross work to be performed. Finally, divide this result, again, by 33,000 to find the required horsepower of the pump.

Or, expressed as a formula, the horsepower (H) required to pump a number of gallons (G) under an effective head (h_1) is

$$\text{Horsepower required, } H = \frac{62.5 \times 231 G h_1}{0.75 \times 1728 \times 33,000} = 0.00034 G h_1$$

Inquiries of General Interest

Cost of Opening a Drift Mine

Can you inform me as to the probable cost of opening a coal mine, or assist me in securing data, in this regard, that will be of value? The coal is bituminous and outcrops on the face of the hill. A trestle will be required to reach the railroad, where the coal is loaded into the cars. I desire to obtain information in reference to the cost of opening the mine, its equipment, and the material needed in the construction.

A discussion of this subject by readers who have had experience along this line would be helpful and interesting.

JOHN N. SHANNON.

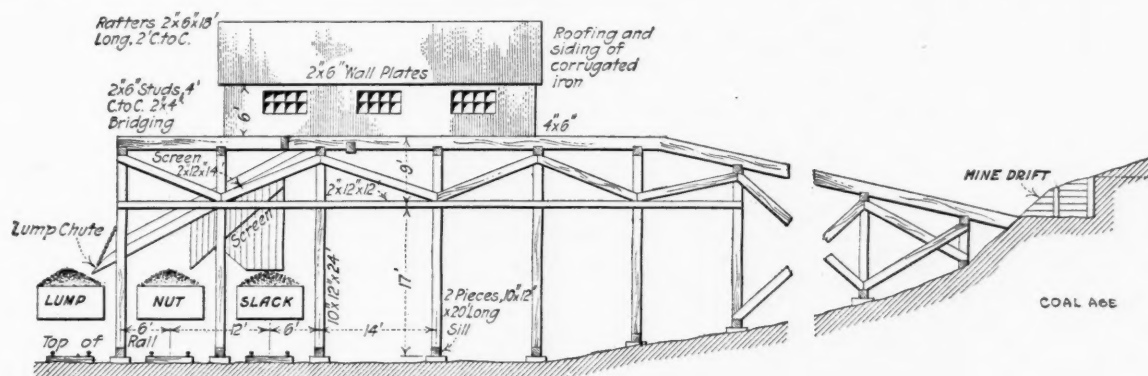
Crafton, Penn.

We agree with the writer of this inquiry that reliable data, giving the cost of material and labor required for the opening of a small mine, would be both interesting and helpful to those contemplating such work. It is

mine; and the following estimate made in that case shows the approximate cost for material and construction.

ESTIMATE OF LUMBER REQUIRED

| | Pcs. | In. | Ft. | Ft. B.M. |
|-------------------------|------|-------|-----|----------|
| Bents, cross-sills..... | 8 | 6x16 | 12 | 768 |
| Sills | 6 | 12x12 | 20 | 1,440 |
| | 2 | 12x12 | 14 | 336 |
| | 1 | 12x12 | 16 | 192 |
| Posts | 22 | 10x12 | 24 | 5,280 |
| Caps | 1 | 10x12 | 20 | 200 |
| | 4 | 10x12 | 16 | 640 |
| | 2 | 10x12 | 12 | 240 |
| | 5 | 10x12 | 8 | 400 |
| Stringers | 2 | 6x16 | 14 | 224 |
| | 20 | 4x16 | 14 | 1,493 |
| | 20 | 4x16 | 12 | 1,280 |
| | 8 | 4x16 | 8 | 341 |
| Tipple beam..... | 1 | 12x16 | 8 | 128 |
| Sway braces..... | 4 | 2x12 | 16 | 128 |
| | 10 | 2x12 | 14 | 280 |
| | 6 | 2x12 | 12 | 144 |
| Flooring | 115 | 3x12 | 14 | 4,830 |
| Chutes | 6 | 2x 6 | 14 | 84 |
| | 20 | 2x10 | 14 | 467 |
| | | 1x 6 | 12 | 400 |
| House, studs..... | 40 | 2x 6 | 12 | 480 |
| bridging ... | 10 | 2x 4 | 16 | 107 |
| wall-plates.. | 14 | 2x 6 | 16 | 224 |
| rafters | 28 | 2x 6 | 18 | 504 |
| | 30 | 2x 6 | 10 | 300 |
| Total | | | | 20,910 |



SHOWING ELEVATION OF A TIPPLE DUMP AND WEIGH HOUSE FOR A SMALL DRIFT OR SLOPE OPENING

readily understood that such data can be only suggestive in their application to a given case, since the cost of labor and material will vary widely in different localities; while the cost of development, in mining work, must be wholly determined by the conditions governing the proposition, in relation to geological features, the size and importance of the undertaking, desired output of coal and other requirements. Notwithstanding these differences, however, such data always have a relative value that makes them an important guide in the estimate of new work; and we hope that such estimates of cost will be forthcoming from readers of COAL AGE who can supply them.

As a suggestion along this line, we present the accompanying diagram, showing a few of the details of construction of a tipple and dumphouse for a drift mine. Three railroad cars are shown under the screens, being loaded with lump, nut and slack. The lump-coal car stands on a platform scale and the weigh beam is in the dumphouse on the tipple. The diagram illustrates the tipple arrangement, in elevation, at an actual drift

ESTIMATE OF COST FOR LABOR AND MATERIAL

| | |
|---|--------|
| Say 21,000 ft. b.m. at \$14 per M..... | \$294 |
| Framing and erecting, 21 M. at \$10 per M..... | 210 |
| Windows, 10, 8-lt., 10x12-in., at \$2.50..... | 25 |
| Iron, nails, 60d., 1 kg. at..... | 3.50 |
| 20d., 1 kg. at..... | 3.50 |
| 3d., 1 kg. at..... | 4.00 |
| Boat spikes, 5x $\frac{1}{2}$ -in., 1 kg. at..... | 5.00 |
| Wrought-iron washers, 1 kg..... | 5.00 |
| Tipple horns, in place, 2 pr..... | 21 |
| Roofing, corrugated, 16 squares at \$2.25, laid..... | 50 |
| Screens, lump, 6x10 ft., in place..... | 40 |
| Screens, nut, 6x6 ft., in place..... | 75.00 |
| Chute lining, $\frac{1}{4}$ -in. boiler plate, laid..... | 25.00 |
| Loading apron | 100 |
| Plates, upper landing, $\frac{1}{2}$ -in. boiler plate, laid..... | 60 |
| Tracking, 20 lb. tee iron, 6 cwt., laid..... | 15 |
| Track scales, in place..... | 125 |
| Blacksmith shop, 20x24 ft..... | 10 |
| Office, 20x32 ft..... | 600 |
| Fan, engine and housing..... | 100 |
| Mules, four at \$125..... | 150 |
| Superintendence and incidentals..... | 1200 |
| Mine cars | 500 |
| | 1000 |
| Total | \$5000 |

The above estimate is for the tipple and track scales only. It includes cost of labor and material, but does not consider the cost of opening the mine or the necessary equipment for its operation, further than providing the necessary equipment for ventilation and mule haulage in the mine.

Examination Questions

Questions Asked That Cannot Be Answered

(Selected from Different Examinations)

NOTE—The following questions have been taken at random from different state examinations and are given here as examples of the lack of technical knowledge displayed by members of examining boards, from time to time, by the questions they ask or the answers assumed by them to be correct.

QUES.—If a pump having a length of stroke of 3 ft., working 15 hr. a day for 5 days, empties a mine of water, what must be the length of stroke of another pump, working 10 hr. a day for 12 days, to perform the same work, the stroke of the former pump being performed four times as fast as the latter?

This question is incomplete, inasmuch as the diameters of the two pumps are not given. In order to answer the question, the candidate must assume that the diameter is the same in each case.

For example, making that assumption, it is observed that the first pump runs $5 \times 15 = 75$ hr., while the second pump runs $10 \times 12 = 120$ hr. in performing the same work; but the second pump makes four strokes while the first pump is making one stroke. But, to perform the same work, other conditions being equal, the length of stroke required must vary inversely as the speed of the pump, and inversely as the number of hours the pump is in operation. In other words, in this case, the ratio of the length of stroke is equal to the inverse speed ratio multiplied by the inverse ratio of the time in hours. Thus, calling the required length of stroke of the second pump x ,

$$\frac{x}{3} = \frac{1}{4} \times \frac{75}{120} = \frac{5}{32}$$

$$x = \frac{3 \times 5}{32} = \frac{15}{32} \text{ ft.}$$

The practical absurdity of this answer shows, at once, the incompleteness of the question asked; because, the required length of stroke of the second pump is less than 6 in., while the length of stroke of the first pump is 3 ft. These pumps, evidently, could not have the same diameter; and the question, as it reads, cannot be answered.

QUES.—If 20,000 cu.ft. of air per minute is passing through an airway with 3.15 hp., and the quantity is increased to 40,000 cu.ft. per min., what will be the water gage?

This question is incomplete, because it admits of two answers, either of which would be correct, depending on the conditions assumed by the candidate. The examining board gives but one answer as correct. The possible solutions of the question are as follows, the first being assumed by the examining board to be the correct answer:

FIRST SOLUTION

Assuming the given horsepower is the power on the air, the effective work is $u = 3.15 \times 33,000 = 103,950$ ft.-lb. per min. The pressure producing the circulation is,

$$p = \frac{u}{q} = \frac{103,950}{20,000} = \text{say } 5.2 \text{ lb. per sq.ft.}$$

This pressure corresponds to a 1-in. water gage. Then, since the pressure varies as the square of the quantity of air in circulation, the pressure required to double the air volume in this mine, or to pass 40,000 cu.ft. of air per minute, will be $2^2 = 4$ times the pressure required to pass 20,000 cu.ft. per min. Therefore, the required water gage, in this case, is $4 \times 1 = 4$ inch.

SECOND SOLUTION

On the other hand, suppose the increase of air from 20,000 to 40,000 cu.ft. per min. is due to splitting the air current, the power producing the circulation remaining unchanged. In this case, the power being constant, and the quantity being doubled, the pressure produced by the circulation is one-half of the original pressure; because when the power remains unchanged the pressure varies inversely as the quantity of air in circulation. Therefore, assuming the circulation is doubled by splitting the air current, the water gage required to circulate 40,000 cu.ft. of air per minute would be $\frac{1}{2}$ in. instead of 4 in., as in the previous case.

To make the question complete, it should have stated, "the power remaining unchanged"; or else have mentioned the cause of the increase in circulation.

QUES.—What power is required to lift 15 tons with three screw jacks with $\frac{1}{2}$ -in. pitch, one lever to each jack 4 ft. long?

Since the use of the word *power* always implies the element of time and no time is mentioned in this case, the question cannot be answered as it stands. It must be assumed that the question intends to ask, What *force* must be exerted at the end of a 4-ft. lever, to raise a weight of $15 \div 3 = 5$ tons, with a screw jack having a $\frac{1}{2}$ -in. pitch.

No data being given by which the frictional resistance of the screw can be calculated, it is possible, only, to calculate the theoretical force required to lift the given weight. This is found by equating the inch-pounds of work performed in lifting a weight of 5 tons through a vertical height of $\frac{1}{2}$ in., with the work performed by a force x exerted through the circumference of a circle whose radius is 4 ft., or 48 in. The circumference of this circle is $2\pi r = 2 \times 3.1416 \times 48 = 150.8$ in., nearly. Then,

$$150.8 x = 5 \times 2000 \times \frac{1}{2} = 5000$$

$$x = \frac{5000}{150.8} = 33.15 \text{ lb.}$$

[Attention is not drawn to these questions in the spirit of idle or aimless criticism; or for the purpose of holding up to ridicule the honest efforts of our mine-examining boards, the members of which, for the most part, work under difficulties that can be appreciated only by those who have served in similar capacities; but rather to emphasize the need of more study and care in the preparation of questions to be submitted to candidates in examination. —Ed.]

Coal and Coke News

Washington, D. C.

The action of the Senate on Oct. 10, in sending back to the conference committee for further consideration the Alaska coal land leasing bill creates, in the opinion of not a few persons, a situation that will prevent final action on the coal bill at this session, particularly if adjournment is taken within a week or ten days, as it is now hoped by many will be the case.

The Alaska coal bill has proved to be a serious bone of contention ever since the conferees began their attempt to harmonize the House and Senate drafts, and the conference with the subsequent debate has proved to be a renewal of the old Alaska conservation of coal lands squabble that raged so violently during the Ballinger-Pinchot controversy some years ago. The criticism upon the final work of the conferees is based upon what is considered to be the limitation of government power over the coal lands, and was voiced by Senator Lane in remarks on the conference report, as follows:

The Secretary of the Interior is forbidden from having anything to do either with the operation of the mines or the working of them. . . . The lessee can operate his mines under the most onerous conditions . . . relating to the employment of labor. He can bring about a condition which is identical with that which has existed in other coal-mining districts in this country, of which we have heard so much of evil in the recent past. He can have gun men on his lands; he can do anything which he pleases with his employees. He can fail to ventilate the mine; he can operate it under conditions which are absolutely dangerous, for the reason that this clause, in my opinion, controls every other provision in the bill preceding it. It is the keystone which will control the operation of those mines under this law.

I would like to have the Senate know exactly what they are doing, or at least what I think they are doing, if they pass this provision. The lessee can hold his coal for the highest price; he can keep it out of the market; he can sell it to the warships of a power at war with this country if he wants to do so.

The government agent is forbidden to have a word to say about it, and when you forbid him, you forbid this nation. There is not only a bar forever upon the government taking proceedings against the lessee, if it does not act in 90 days after it gives notice, but there is also a bar upon the government from doing anything else. Unless it was carefully designed for the purpose of compelling the government and the people of this country to keep their hands off and to allow the private owner to run the mine in any manner he wants to run it, I do not see why it was put in. It has that effect.

If I were the lessee of a coal mine in Alaska and wanted to operate it at my own sweet will and make the most out of it, put it and rob the labor and do anything else I wanted to, without interference or supervision, I would like to have this provision remain in the bill. If, on the other hand, I was representing the government and wanted the mine operated properly and the products from it handled in a manner which would be beneficial to the community and to the people at large as well, and at the same time do justice to the owner thereof, it is the identical kind of a provision that I would keep out of the bill if I could. Here is the government tied to leases of its own land under a law which forbids it from taking any action for the relief of conditions which may be against the interests of the people of this country. It compels the government to give 90 days' notice, but if it does not go into court within 90 days and make good, the government and the people are forever debarred from further action. On the other hand, the lessee of the mine has unlimited time granted him. The short end of the rope is given to the government and the people of this country who own the land, and one of whose resources it is.

Under another section of the bill, any man may take up as much as 5000 acres under a lease. The Senator from Nevada (Mr. Pittman) informed us a few days ago, when the bill was before the Senate, that in one of those fields, I think it was the Matanuska, there are not over 15,000 acres of good coal land. Two lessees could go out under this act, under another provision, however, and secure all the land except what is reserved by the government. You may depend upon it, the government will not get the best of the coal land. If anyone thinks the government is going to get the best of the coal lands when it comes to locating it, I think he will find he is mistaken. That land is pretty well known now. It has been prospected and looked over with careful eyes by experts, and the best of it will be leased. They are allowed to take as much as 5000 acres, and two or three men can cover, we will say, a field of 10,000 acres and control the coal situation in Alaska.

These leases will not be for the benefit of the people of Alaska if this provision is left in the bill. They must depend on the Secretary of the Interior as the agent of this government, and he is not allowed to have anything to do with it or to say about it. You give him 90 days if he wants to file a notice in which to begin a court proceeding. I have seen a notice improperly written where a man rode one day and night in order to "stake" it on a claim, and

for the reason that he did not have it properly worded he lost his claim. It is very easy to make a mistake in a notice. Many good attorneys do not know how to write them properly. Anyone who has had experience in a mining country knows that. The government is forever barred from rectifying any mistake which its agents may make forever and ever, whereas the person who owns the lease has time without end in his favor to hold and operate it under conditions which the Secretary of the Interior and the government of the United States are forbidden to question or even ascertain. He is forbidden to interfere in any way. If he goes around to look into the conditions, that is interference. If he takes the time of the employees to ride him up and down the shaft or enters a drift to examine the mine, he is in the way, and he is interfering with the operation of the mine, and they can oust him under this clause.

Possibilities of South American Market

An increasing interest is expressed in government circles with respect to the possibilities of the sale of American coal in the South American market. The following statement, which has been prepared by a private concern, gives the facts in a way that is believed by government authorities who have been making a study of the situation to be correct:

It is not now seen definitely what form the enterprise of our coal companies in developing the South American market will take. Some of them have become actively interested. Will they wait for demand, and fill orders, or will they go down and establish distribution? At the present, excepting for one or two important exhibitions of enterprise, the coal interests seem to be waiting for orders.

Ultimately, it should be possible to sell coal from the United States in Brazil or in Argentina cheaper than to sell Cardiff coal there. Good quality fuel, such as is purchased by South America, has recently sold at about \$3 per ton f.o.b. both at New York and at Cardiff. The cost of shipping to Rio de Janeiro has been \$3.65 per ton from our Atlantic ports. Cardiff has in the past had an advantage in rates because ships sent down there are always able to get return cargoes, but the differences are becoming less and less. There are port costs at Rio aggregating \$1.24 per ton, including "dispatching," customs, statistical charges and literature. Altogether, "soft" coal has cost about \$8 a ton at Rio. The shipping costs are much the same to Buenos Aires, the advantage of better return cargoes offsetting the difference in distances.

Argentine railways figure the cost of their locomotive coals on the tenders at \$10 per ton. The most important adverse element in the economies of coal shipment to South America under present conditions is, however, the lack of dockage facilities for coal from the United States in the South American ports. A few weeks ago it was estimated that the costs of a speculative shipment of 10,000 tons of coal to Buenos Aires would be \$85,000 in round figures, with insurance and freight upon a chartered vessel counted in, and unless arrangements had been made for discharging the cargo within a limited number of days after arrival, an additional cost at the rate of \$600 a day would have to be counted upon.

All South American coal docks are owned either by European interests, by the steamship companies or by a single concern with European business affiliations in almost every port. All this explains why coal merchants in the United States are not sending off coal to sell for what it will bring in South America.

To make profitable on a continuing basis the sale of our coal in South America's east coast cities, it will be necessary for the business to be permanently organized. Coal docks ought to be purchased, mechanical unloading devices should be installed and special ships should be chartered. The latter is not so very important, as ordinary ships may be unloaded mechanically without enough loss of time to count considerably.

Certain of our coal companies are studying the situation with some such permanent organization in view. But the movement of coal southward now is apparently on direct order.

In the coal trade, it is said that Chile is making inquiries and will next month probably ask for bids for 300,000 tons of coal per year for three years. The Argentine Navy is also said to be inquiring. It is explained that the South American demand has already affected the domestic market for coal, and that quotations on a contingent basis extending over the first of next year have been refused because of the probability of a rise in the price.

HARRISBURG, PENN.

The anthracite coal regions are suffering from the exceptionally severe drought. There has been but one rain since the last week in August, and that was hardly sufficient to moisten the ground. Prior to Aug. 30, a dry spell prevailed, so that there has practically been a period of water famine for 11 weeks, unprecedented for this time of the year.

The drought has added to the operating expenses of many of the coal companies, some of which have been obliged to put special water-hauling trains in service. Others have been forced to extend mains and get their supply from new sources, farther away from the mines.

Despite the drought the output of the collieries has not been reduced. Last month, the output was 370,000 tons more than in any September in the anthracite industry. The total production was 6,256,192 tons, an increase of 673,913 tons over the same month last year. The September output exceeded even that of September 1912, which heretofore held the record with 5,876,496 tons.

The effects of the drought are felt more in the Schuylkill region than through the Lackawanna, Wyoming and Lehigh regions, where the big companies, profiting by previous experiences, have in recent years been carefully conserving their watersheds and sinking artesian wells, which seem to afford a sure relief against the periodical dry spells that hit this part of the country.

The Lehigh field has been the least affected, principally because the Lehigh Valley Coal Co., the chief producer here, years ago bought up the water rights in and around Hazleton, and thus has an abundant supply under the most unfavorable conditions. The company is making further provisions against drought by the construction of large reservoirs at Drecks Run, at the mouth of Never Failing Springs four miles from Hazleton, where the water trains run from the Schuylkill region to fill their tanks. But for this supply some of the mines would have to close down.

Through the Schuylkill region, however, the worst drought in 50 years is being experienced. All the feed streams to the reservoirs and the springs have long since dried up, and the region is depending at the present time solely on what water is stored and on tank trains. For drinking and domestic use the people are in some cases carrying water for miles.

The Philadelphia & Reading Coal & Iron Co. has adopted drastic measures to secure a sufficient water supply to keep up steam in the boilers. Should the trains, which are now being run carrying water to places where it is most needed, fail of their purpose, it will mean a colliery suspension. At Lakeside, East Mahanoy Junction, there is a large quantity of water stored and this is now being drawn upon by the Reading company. South of Broad Mountain, the Reading is also drawing on the Tumbling Run Dams, several miles from Pottsville.

While the stored water at points referred to holds out every effort will be made to keep the collieries working when there is the heaviest demand for coal. Aside from the water supply, which the Reading company owns, it pays considerable sums in royalties for the daily supply for several large trains.

The drought which has fallen on the western part of the state bids fair to result in the stoppage of work in several of the largest mines in the bituminous region, unless relief is soon had. Some of the largest mines in Westmoreland, Washington, Greene, Somerset, Cambria and Allegheny counties have been forced to close down within the last week or 10 days, because water for the boilers could not be obtained in sufficient quantities to operate them. Cokeburg, mines are idle owing to the drought, and Ellsworth is only running part of the time. Pigeon creek is practically dry in many places.

PENNSYLVANIA

Anthracite

Throop—The 1200 men employed at the Price-Pancoast Colliery, who were made idle some time ago on account of caving in various chambers of the mine, have resumed work, the places having been put in safe condition for operation.

Nesquehoning—Claiming that the Lehigh Coal & Navigation Co. had discriminated against four company miners when it discharged them, the 500 employees of the No. 11 colliery went out on strike on Oct. 9, throwing the colliery idle. The company insists that the men were discharged for quitting work before the regular time.

Shamokin—Oliver Eishehauser, assistant foreman at the Susquehanna Coal Co.'s Hickory Ridge Colliery, was walking across a breast on Oct. 10 when he stepped into a body of gas which rushed from an adjoining chamber. He was hurled to the bottom of the gangway and was fatally injured.

Deringer—Lehigh Valley coal and railroad company detectives in the Hazleton region, believe that another attempt was made on Oct. 10, to wreck the pay train of the Lehigh Valley Coal Co. When the pay train was returning from Deringer to Hazleton, the engineer thought he saw an obstruction on the track ahead, stopped the train and started to make an investigation. He found several sticks of dynamite along the track and also discovered that one had been exploded with a fuse. The work was evidently that of a person not well acquainted with the use of dynamite.

Bituminous

Pittsburgh—The Pittsburgh Foreign Trade Commission on Oct. 10 received a request from the Government of British

Guiana asking that some concern in a position to ship 5000 tons of bituminous coal per month for the next 12 months communicate with them immediately. Accompanying the request was the price the British Guiana Government officials are willing to pay for coal, with a bonus offered for prompt delivery. As the figure named is something in excess of what coal is bringing here, the order will probably be divided between two or three local concerns who are in a position to make prompt shipments.

Connellsville—The Connellsville coke business showed slight gains recently in production and shipment, but the total is still in the neighborhood of 250,000 tons per week. The furnace production receded, but merchant output increased. The drought is a serious problem to many of the coke makers.

Mount Pleasant—The University of Pittsburgh through its new extension plan, proposes establishing a mining class at this place for the benefit of the community. The work will include advanced studies in mining, including preparation for fire boss, assistant mine foremen and mine foremen's examinations next spring. No charge will be made for the instructions except the expenses of the instructor.

Huntingdon—On Oct. 8, a boiler in the power plant of the Rockhill Coal & Iron Co., exploded, killing one man and severely injuring two others. The company's damage was \$6000. The coal tippie was demolished and two other boilers injured. About 280 employees will be thrown out of work for at least a month. The cable on the incline at the McIntyre mine, Finleyville, broke the same day and two cars dropped down and crashed through the tippie to the railway tracks below. Three men were badly injured.

Charleroi—A total of 14,739,000 bushels of coal passed down the Monongahela from river mines during the month of September. This is considered a satisfactory showing in view of the fact that low water conditions in the Ohio river prevented shipments of coal to the south and that barges for loading were in limited supply at many of the river mines. In September, 1913, when conditions were more favorable, 17,699,000 bushels were shipped down the river and in August of this year, the shipments aggregated 12,648,000 bushels.

WEST VIRGINIA

Charleston—An agreement was recently reached between the Branch Coal Co., operating at Elverton, on New River, the special board of arbitration and Governor H. D. Hatfield, the referee, whereby the miners who have been on strike there since July 1, resumed work. The company, it is said, has agreed to reinstate all of its former employees, about 100 men being employed at Elverton.

Fayetteville—The sale of the large timber holdings of the Sewell Lumber Co. to the Babcock Coal & Coke Co. has been confirmed by the circuit court, the price of \$230,000 being satisfactory to the creditors of the selling company. The management which has been operating the property will be retained. The property consists of approximately 10,500,000 feet of standing timber, 4,700,000 feet in logs and \$100,500 worth of manufactured lumber. Mr. Babcock held a vendor's lien on the property for \$50,000, and paid \$180,000 in cash for it, representing the difference between the agreed price and the amount of his lien.

Macdonald—In reply to inquiries received from Charleston, Huntington and other cities which desired the company to locate there, the New River Coal Co. recently announced that it will not at present move its general offices from Macdonald, on account of the unsettled conditions existing. It is probable, however, that the contemplated move will be made as soon as conditions become more nearly normal.

KENTUCKY

Sebree—A. B. Cobb and C. M. Melton are making preparations to develop coal lands in this vicinity.

Louisville—Complaints of the Stonega Coal & Coke Co. and the Blackmore Coal & Coke Co., both with mines near Big Stone Gap, Va., against the Louisville & Nashville R.R. Co., were heard here by representatives of the Interstate Commerce Commission recently. By this action the mining companies seek to compel the Louisville & Nashville to publish through interstate rates from the complainants' mines to various points touched by the road. At present, it is set forth, the complainants are compelled to pay 10 cents extra in order to get the products of their mines to Appalachia Junction, from which point they pay regular interstate rates. The Commission's ruling is not expected for some time.

Pikeville—With general business conditions in their present state, there is little in the way of new operations in prospect in eastern Kentucky. Money is scarce and the coal market is not now in a position to encourage new ventures.

Two new operations, however, are being opened near here. One is located on the John Roberts property at Penny, on Shelby Creek, and is backed by J. G. Pierce and other Ashland capitalists, while the other, nearby, is promoted by George W. Gray, of Paintsville. Both of these operations are within the bounds of the Elkhorn coal field in Pike county.

OHIO

Athens—The rumor persists in coal circles that the Lorain Coal and Dock Co. will reopen its old Eclipse mine, located midway between Athens and Nelsonville in the Hocking Valley. It is said one of the large mines of the company in eastern Ohio will be dismantled and the equipment moved to the Eclipse mine. The officials are not yet ready to make a statement but the move is being considered.

St. Clairsville—The union miners' supply store at Provident near here, was destroyed by fire on Oct. 6, with a loss of \$9000, the fire being the second in the building in the past few months. Local officers are investigating a report that the fire was of incendiary origin.

Bellaire—International Secretary-Treasurer William Green and State President John Moore, of the Mine Workers, have arrived in the eastern Ohio fields for the purpose of taking up the work of relieving the distress existing among the families of the 16,000 striking miners.

INDIANA

Petersburg—The S. W. Little coal mines, 7 miles south of here, at Little, employing 400 men, have closed down for a month, during which they will be overhauled and placed in condition for the winter run.

Sullivan—W. D. Hunter, of Terre Haute, has leased the Reliance mine near here and expects to have 150 men at work by the first of the year. A bonus of \$1000 was raised for him by business men. The mine had been closed for months.

Indianapolis—The executive officers of the U. M. W. of A. announce that beginning with Dec. 1 the "Journal" will change from a weekly in its present form of 8 pages to magazine form of 32 pages and will be printed in English, Italian and Slavish, the three languages that it has been decided will reach the largest number of the organization's members.

ILLINOIS

Herrin—The railroads in southern Illinois are refusing to give cars to the mines on account of the unusually large number of unbilled cars on the track. One mine had 184 "no bills," which consisted of screenings and the washed sizes from No. 2 down. Many mines in this section have from 25 to 50 thousand tons of screenings dumped on the ground.

MISSOURI

Rich Hill—The Perry-Page-McMahan-Holland Coal Co., which is said to have a large area of coal land in the Carbon Center district, is alleged to have been conducting operations successfully for a month past with strip pit machinery. The coal bed, 4 to 6 ft. thick, lies 30 ft. below the surface, where the stripping equipment is now operating, two miles south of Carbon Center.

ARKANSAS

Fort Smith—A 14-ft. bed of coal of excellent quality, 50 ft. below the surface, is reported to have been discovered by Stewart N. Kenney, a coal expert, while drilling on the Campbell farm near Van Buren. Eastern operators are said to have sent men to investigate. The discovery was reported early in October.

KANSAS

Pittsburg—A district convention of mine workers on Oct. 6 arranged to support a suit for damages against those who brought charges of graft against Alexander Howat, former president of District 14.

PERSONALS

A. L. Bogt, formerly connected with the Chapman Mining Co., of Columbus, has accepted a position with the Colonial Coal & Supply Co., of Columbus.

Harry M. Taylor, of Chicago, has recently associated himself with the Central Coal & Coke Co., of Kansas City, Mo., in the capacity of vice-president.

H. Ward, Jr., with office at 619 Ferguson Building, Pittsburgh, Penn., was recently appointed a special representative in the Pittsburgh region of the Scranton Pump Co. of Scranton, Penn.

J. W. Johnson, superintendent of the Lorain Coal & Dock

Co.'s mines, has received word from headquarters to ship all mine mules to Columbus for the winter. These animals will be loaded at once.

Willis E. Holloway, Pittsburgh representative of the Roberts & Schaefer Co., of Chicago, will, on and after Oct. 15, have his headquarters at the home office, namely the McCormick Building, Chicago, Ill.

C. M. Anderson, formerly of the C. M. Anderson Coal Co., Columbus, Ohio, has been appointed Western sales manager of the Elk River Coal & Lumber Co., of Clay, W. Va., and has opened up offices on the eighth floor of the Columbus Savings & Trust Building.

Charles J. Finger, general manager of the Ohio River & Columbus R.R. has been named receiver for the property by the local courts. Judson Harmon representing the stockholders applied for the receivership. The road operates between Ripley and Sardinia and connects with the Norfolk & Western.

C. M. Moderwell, of Chicago, was recently elected president of the Illinois Coal Operators Associations. F. C. Hammold was chosen secretary and treasurer, James Neeham was elected vice-president, and Edwin G. Bend was elected as the operator member of the arbitration board to settle disputes with the Miners' Union.

OBITUARY

John Forrester, president of the Forrester Coal & Coke Co., and owner of the Paradise mine, died suddenly at his home in Duquoin, Ill., on Oct. 8. Mr. Forrester was one of the best known mining men in southern Illinois, having held many important positions in connection with mining affairs in that section.

Edmund C. Donk, president of the Donk Bros. Coal & Coke Co., age 63 years, died at his home in St. Louis, 3643 Castleman Ave., on Oct. 9, after a long illness. He was born in Germany on Feb. 19, 1851, and came to this country at the age of 5, living first in Peoria, Ill., and coming to St. Louis at the age of 12 years. He engaged in business with his brother, the late August Donk. He was also president of the Merchants & Manufacturers Investment Co., vice-president of the St. Louis, Troy & Eastern R.R., and vice-president of the East St. Louis, Columbia & Waterloo R.R.

TRADE CATALOGS

The Cross Engineering Co., Carbondale, Penn. "Perforated Metal, Coal Preparing Machinery and Simplex Rivetless Chains." Forty-five pages, 6x9 in., illustrating and describing various coal screen perforations and conveyor chains.

CONSTRUCTION NEWS

Jellico, Tenn.—A company has been formed to build a railroad from this city to Capachine Creek for the purpose of opening up the coal and timber fields lying to the west of Jellico. It is believed that this will greatly add to the prosperity of both Jellico, Tenn., and Jellico, Ky.

Gallitzin, Penn.—The tippie at No. 10 mine of the Pennsylvania Coal & Coke Corporation which was recently damaged by fire, is being rebuilt. It is believed that the improvement will be completed in a short time. The operation of the mine meanwhile, is still going on.

Whitesburg, Ky.—The Kentucky-Dean Coal Co., recently organized at Viper in the Perry County coal field, is starting a coal development there, employing a considerable force of men. It expects to begin shipping coal within 90 days, it is said. The new operation is on the main line of the Lexington & Eastern R.R.

Morgantown, W. Va.—D. M. Chaplin & Co. recently closed a contract with the Monongahela Coal Co. for the building of a tippie at the coal company's mine. This contract includes the installation of all necessary machinery and the work will be undertaken at once. The plans call for a gravity chute, which is considered an improvement over the type of tippie formerly used in this section.

Blackfield, Penn.—Twenty-five more houses to accommodate the miners families of Atlantic No. 2 mine are to be erected for the miners' who wish to remove to the scene of their work. Twenty-five miners' homes have already been

built but the company found that these will be insufficient. The settlement has been christened Blackfield, in honor of Black Brothers who control the operation.

Clay City, Ky.—The Day Bros. Lumber & Coal Co. is beginning the construction of a branch line of railroad up King's Creek to reach rich coal and timber holdings. The line will be about five miles long. It is the purpose of the company to develop the rich cannel coal fields, and forests, the development work to start at once. Several hundred men will be given employment in the new development, which will be among the largest in Eastern Kentucky. The grade work is billed to be completed by Feb. 1 and by Mar. 1 the coal operations will be well under way.

Fayetteville, W. Va.—The Boone County Coal Corporation is opening up an extensive operation on Beech Creek, in Boone County, and expects to be taking out coal within two months. The construction of a railroad to connect the location with the Coal River branch of the Chesapeake & Ohio R.R. has been under way for several weeks, and is expected to be finished soon, giving the property the necessary rail outlet. The mine will produce No. 2 gas coal. The company has leased 800 acres of coal land on Beech Creek to the Michigan & West Virginia Coal Co., organized by Detroit interests, and the lessee is preparing to begin development work.

NEW INCORPORATIONS

Cleveland, Ohio—The Pluto Coal Co. has been organized for the purpose of mining with a capital of \$10,000. The incorporators are M. A. Copeland, J. A. Eldon, H. H. Mosel, C. Verbesky, and M. Barge.

Penny, Ky.—The Penny Coal Co. has increased its capital stock from \$50,000 to \$75,000 and will make some increases in its coal mining plant on Shelby Creek, said increases to be complete by the first of the new year.

Jeff, Ky.—The Hamden Coal Co. has been organized here to make a large coal development. The incorporators are: W. H. Hall, J. M. Combs, Felix Combs and others. They propose starting the work of development by Jan. 1.

Viper, Ky.—The Viper Coal & Development Co. is being organized at Viper, to make a coal development, the work having already started. A large force of men are already at work opening mines, building miners houses, etc. The development is on the L. & E. main line.

Charleston, W. Va.—A charter has been issued to the Taylor Collieries Co., the incorporators of which are William A. Taylor, James M. Taylor, Charles P. Taylor, and Newton F. Hawkins, all of Pittsburgh. The company is capitalized at \$100,000, and will have offices in Charleston. Coal mines will be worked in Harrison Township.

INDUSTRIAL NEWS

DeKovan, Ky.—The Ohio Valley Coal Co.'s tipple and the Illinois Central freight house were destroyed by fire a few days ago; the loss is not stated.

Middlesboro, Ky.—It is understood here that the Southern Ry. has placed a large contract order for coal with the mines on Stony Fork and in Wingo Hollow. This is counted on to keep the mines in this section busy for a time at least.

Knoxville, Tenn.—A conference of coal operators and officers of the United Mine Workers of America will be held at Soddy, Oct. 28, for the purpose of arranging certain matters relative to the miners' wage scale.

Washington, D. C.—An advance of 10c. per ton in the freight rates on coal purposed by the Southern railroads was recently filed with the Interstate Commerce Commission. Unless suspended by the commission the increase will become effective Dec. 1.

Charleston, W. Va.—The "Lucy Marmet," one of the largest towboats on the Kanawha River, was totally destroyed by fire recently, with a loss of about \$20,000. The boat was owned by the Marmet Coal Co., and had been in commission about 11 years. It is not known how the fire started.

Philadelphia, Penn.—All records for coal handling at this port were recently broken when 5500 tons of cargo and bunker coal were dumped into the hold of the steamer. "Castle Bruce," in four hours and 30 minutes. Some years ago 4100 tons of coal were loaded into a vessel at this port in 14 hours. This was considered a remarkable feat.

The present record was made possible by suitable coal handling machinery.

Buffalo, N. Y.—There is a possibility of saving the Buffalo & Susquehanna Ry. the coal and lumber line built from Buffalo to Wellsville by the Goodyear interests. The Pennsylvania R.R. is making a survey of the road and may lease it, in which case the order of discontinuation, effective on Nov. 1, will be recalled.

Louisville, Ky.—The St. Bernard Mining Co., through Julius Bierach, of the Louisville office, has closed a contract with the Kosmos Portland Cement Co. to run for five years. This contract calls for a total of 180,000 tons of coal. It will be delivered via the Illinois Central on which both the plant and the mines are located.

Ensley, Ala.—All operations at the Tennessee Coal, Iron & Railroad Co.'s properties in Ensley will be resumed shortly. While the past partial shut-down has not caused any great discouragement in this district, at the same time it will be extremely gratifying to know that the plant will be running to full capacity soon.

Washington, D. C.—West Virginia coal operators represented by the Hitchman Coal & Coke Co., will ask the Supreme Court to review the action of the Fourth United States Circuit Court of Appeals in reversing the decision of Judge Dayton to the effect that the United Mine Workers was an unlawful organization. This case has attracted widespread attention from both capital and labor.

Olympia, Wash.—The Thurston County Superior Court has issued an order suspending the recent order of the Public Service Commission for lower freight rates on coal from Roslyn to all parts of the state, and required the Northern Pacific R.R. to furnish a \$25,000 bond to protect shippers and customers pending the final decision of the court.

Birmingham, Ala.—The Pratt Consolidated Coal Co. recently resumed work on the mine openings and coal barges of the Warrior River to take care of the river navigation. This company was engaged in constructing barges for transporting coal to the Gulf Ports and opening a mine for securing the fuel when the government hesitated about finishing a lock which was necessary for the success of the enterprise on the Warrior River. The government has promised to construct the lock and finish it at once; hence, the resumption of work.

Newark, Ohio—One of the most important happenings in coal mine circles in Ohio during the past week was the announcement by the Newark Natural Gas & Fuel Co. to the effect that after Nov. 30 the distribution and sale of natural gas will be discontinued. This action was taken because of a conflict over the franchise and the price to be charged for the gas. This announcement means a large market for coal and already many of the householders have laid in a supply of fuel. Manufacturing plants and business houses are also affected.

Toronto, Ont.—The Mountain Park Coal Co., the capital of which is mainly British, and which has holdings of about 6000 acres on the head waters of the McLeod River, about 200 miles southwest of Edmonton, Alta., is making preparations for a large output during the winter. It has its own railway 31 miles in length, connecting it with a branch of the Grand Trunk Pacific. The present output is 500 tons per day, but the mines are being developed to a capacity of 2500 tons per day. The coal is high grade bituminous, suitable for steam and domestic purposes.

Pittsburgh, Penn.—Permission to foreclose on a mortgage of \$6,309,500, on which there is interest due of \$315,475, was asked in a bill in equity recently filed in the Common Pleas Court by the Commonwealth Trust Co., Trustee against the United Coal Co., and James D. O'Neil, Robert T. Watt and William E. Johnson, receivers of the coal company by Attorneys, Watson & Freeman, and Sullivan & Cromwell. The plaintiff asked for permission to sell at public sale the coal lands of the United Coal Co., together with those of other coal companies pledged with the trustees as security on the mortgages.

Cincinnati, Ohio—It is reported that the Chesapeake & Ohio loaded in the Kentucky and West Virginia fields during the month of September, 2,110,735 tons of coal, which is an increase of 334,515 tons as compared with the same month of last year, and a decrease of 105,725 tons loaded in the previous month, August, which was the best month in the history of the road. There were two more working days in August, however, which partly accounts for the difference. This road has issued a note to operators along its lines requesting that all shipments destined to the Lakes be discontinued, as far as possible, by Oct. 15, in order to get all such shipments out of the way in anticipation of the looked-for commercial revival.

Coal Trade Reviews

General Review

Anthracite steady, but lacking the customary snap at this time. Bituminous continues to drag and the export business is scarcely above normal. All markets are much dependent on colder weather. Lake shipping is somewhat better.

The relatively high temperatures prevailing over the past few weeks have caused a slowing up in the demand for hard coal, and the trade is essentially marking time, pending the appearance of colder weather. Market observers, however, are agreed that this is but a temporary condition, and that the trade will respond quickly to a return of more seasonable weather; in fact, there are reports in some sections that the companies are even now falling behind in their shipments, so that there is some anxiety as to what the situation will be when the fall rush opens up. The demand still centers on stove coal, which commands a premium when sold by itself. Egg coal and the steam sizes are inclined to drag.

The bituminous situation at Tidewater is still generally irregular, and even more discouraging. The resumption of shipping from the Welsh ports, the difficulty American operators found in arranging satisfactory terms with prospective purchasers in the foreign countries, in addition to the tight money market and the danger of violating neutrality laws, have all been restraining influences, adverse to a more general expansion of our export business. There has as yet been no significant change in quotations, but the offshore business has materially contracted for the time being at least, and there are excessive accumulations at most of the ports. About the only constructive feature of the current situation has been some slight improvement in the bunkering demand.

There have been no developments of a favorable character in the Pittsburgh district; in fact, the operators are now looking forward to another severe slump when Lake shipping closes. The constantly recurring reports of large orders from abroad for American goods may create an expansion in general manufacturing which will do much to relieve the situation, but, as a rule, there is not much hope of an active market before the first of the year at least. The domestic market in Ohio is dull and hinging on the weather conditions. There has been some spurt in the Lake trade, while the circulars are generally well maintained, and it is expected that the domestic trade will right itself promptly when the weather becomes more seasonable.

In the Southern market, the domestic trade, which has been the only encouraging feature of the situation there, has slowed up materially under the influence of adverse weather conditions, and operations are now curtailed to fully half capacity; the general belief that any change from now on must be for the better is the only hopeful feature at the moment.

The steam market in the Middle West is still weak, while the recent strength in the domestic trade is now confined more particularly to certain restricted sizes, the others being much easier. The market has been overshipped on some grades, on which a definite recession in the demand is noted, with occasional accumulations on demurrage. No general improvement is anticipated before the first of the new year.

ATLANTIC SEABOARD

BOSTON

Hampton Roads coals quiet. Tendency of export trade is to sag, and coastwise shipments are confined to contract application. Georges Creek about normal and uneven market for Pennsylvania grades continues. Anthracite shippers falling behind on deliveries.

Bituminous—The Pocahontas and New River market is practically featureless. The amount dumped at the piers has been only fair and the volume standing in the terminal yards is still much heavier than normal. Off-shore demand is still irregular with a general tendency to sag partly because of the resumption of normal loading at the Welsh

ports. Satisfactory terms of settlement continue to be difficult to arrange and together with the tight money market and the possibility of colliding with the rules of neutrality, most inquiries are subjected to close scrutiny before commitments are made.

In this territory about all of the receipts are being applied to contract business. A spot market does not exist, except for small tonnages up the line from the various distributing points. Prices show no significant change, however, and it is felt that present values will probably hold until the industrial situation shows a change for the better; \$2.35 f.o.b. Hampton Roads is the prevailing quotation although it is well recognized that the buyer of spot coal can negotiate for less.

The market for the Pennsylvania grades seems rather uneven. For some coals there is a fairly steady call but for others the situation is so stagnant that several operations have been shut down for the time being. The only really active feature now is the moderate rush to get forward sufficient supplies for points like Bangor where navigation normally closes the latter part of November.

Water Freights are still at the season's minimum. There is a dearth of inquiry and rates are nominal at 65c., Hampton Roads to Boston, on fair sized vessels. Steamers are a drag on the market.

Anthracite—In some quarters the policy of suspending mining operations during the summer dullness is now beginning to show its effect. Practically every order requires a proportion of stove size and several of the shippers are able to supply it only after considerable delay. If this is an indication of the state of things now there will surely be an active market later when the cold weather appears. Dealers who were relying on regular shipments week by week find that the companies are getting behind on their orders.

Bituminous prices at wholesale are about as follows:

| | Clearfields | Cambrias Sommersets | Georges Creek | Pocahontas New River |
|----------------|-------------|------------------------|------------------|-------------------------|
| Mines* | \$0.90@1.50 | \$1.25@1.65 | \$1.67@1.77 | |
| Philadelphia* | 2.15@2.80 | 2.50@2.90 | 2.92@3.02 | |
| New York* | 2.40@3.10 | 2.80@3.20 | 3.22@3.32 | |
| Baltimore* | | | 2.85@2.95 | |
| Hampton Roads* | | | | \$2.80@2.85 |
| Boston† | | | | 3.60@3.78 |
| Providence† | | | | 3.63@3.73 |

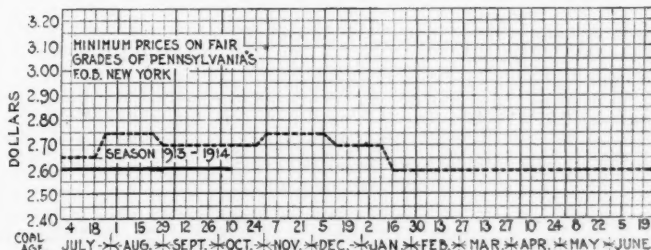
* F.o.b.

† On cars.

NEW YORK

Spot bituminous market practically dead but contract movement continues fair and there is little coal reported on demurrage. Prices are low but steady. Heavy call for anthracite stove coal continues unabated. Steam sizes still relatively weak but improving.

Bituminous—Although there is almost a complete absence of demand for spot bituminous the market continues in a healthy condition. The lack of demurrage coal is particularly noticeable. It is seldom that the higher grades are forced on to demurrage there being almost at all times a ready market for them, but the cheap fuels, that only move satisfactorily under abnormal conditions, often cause trouble in



this respect. The coal is produced cheaply, very frequently without regard to preparation, and ordinarily sells at a low price but when on demurrage it is sacrificed at ridiculous figures. This has a tendency to fix a price which is not always indicative of the market conditions as a whole. Nevertheless it has an effect tending toward demoralization which is to the advantage of neither the producer nor the consumer.

The contract coal moves along in fair shape. While some plants are closed entirely and others are only taking 25 to 50%, a fair average would probably be 75 to 85% of normal; in some few instances where the war has increased the demand for particular lines, factories are working overtime and consequently taking an additional supply. The export business has fallen off to about normal.

While there is no prospect of car shortage or other reasons for inflation of prices the outlook, with winter now approaching, is good and business on its present basis should be maintained. The market is not quotably changed from last week which we continue as follows: West Virginia steam, \$2.50@2.60; fair grades Pennsylvania, \$2.55@2.65; good grades of Pennsylvania, \$2.70@2.80; best Miller Pennsylvania, \$3.10@3.15; Georges Creek, \$3.15@3.25.

Anthracite—In spite of the exceptionally warm and unseasonable weather all of the anthracite prepared sizes have been moving well with the exception of egg. Stove still continues short and is selling in some quarters at a premium when moved alone.

The moment that one size begins to be a trifle short there seems to be a desire on the part of all of the trade to get shipments on this particular size; the tendency is towards placing of larger orders than necessary to cover requirements. This same condition obtained last year at this same season and reached a point where stove was almost unobtainable, when suddenly within a very few days the bottom dropped out of the market. There is a question whether this same condition will not apply this year.

It is a fact, however, that notwithstanding the tendency on the part of the operators to cut down the percentage of egg produced, the market on this size has continually become weaker from year to year. The consumer has been steadily changing from egg to stove, having found that more economical results could be had from the stove size.

Steam sizes are not active, but cold weather would also improve the condition on these sizes, especially on pea which is used extensively by the large apartment buildings throughout New York City. The demand from the West and all-rail into New England and Canada is very brisk and as soon as egg begins to move the situation on all sizes should be most satisfactory.

The New York hard coal market is now quotable on the following basis:

| | Upper Ports | | Lower Ports | |
|----------------|-------------|-------------|-------------|-------------|
| | Circular | Individual | Circular | Individual |
| Broken..... | \$5.10 | \$4.60@5.10 | \$5.05 | \$4.45@5.05 |
| Egg..... | 5.35 | 5.10@5.35 | 5.30 | 4.95@5.30 |
| Stove..... | 5.35 | 5.35@5.45 | 5.30 | 5.30@5.40 |
| Chestnut..... | 5.60 | 5.45@5.60 | 5.55 | 5.40@5.55 |
| Pea..... | 3.55 | 3.40@3.55 | 3.50 | 3.35@3.50 |
| Buckwheat..... | 2.80 | 2.65@2.80 | 2.50@2.75 | 2.25@2.75 |
| Rice..... | 2.30 | 2.00@2.30 | 2.00@2.25 | 1.50@2.25 |
| Barley..... | 1.80 | 1.65@1.80 | 1.75 | 1.50@1.70 |

HAMPTON ROADS

Export shipments are slowing up. Prices still at circular. Some small shipments of nut and slack moving coastwise.

Dumpings at Tidewater ports during the week have not been heavy and there appears to have been a decided falling off in demand, both in the foreign and domestic markets. The greater part of the coal moving coastwise, so far as can be learned, seems to have been on contract although some spot sales have been made. The movement foreign has been almost at a standstill during the entire week, few cargoes having been cleared. As is usually the case the largest coastwise cargoes have gone to Boston. In addition to Pocahontas and New River mine-run there has also been some movement of nut and slack and high volatile.

Prices so far as can be ascertained have been around \$2.80 to \$2.85 for mine-run and about \$2.60 for the other grades. There seems to be some little increase in the number of vessels calling for bunker coal but the quantity going out is still below normal.

The accumulation of coal here is somewhat in excess of usual. This is due to some extent to vessels which were expected not arriving on time and it will, no doubt reduce to a large extent during the next few days.

PHILADELPHIA

Slight easing off in demand for anthracite, owing to unseasonable weather, but mining continues in full swing. Bituminous still fails to show improvement. All seem to have ample stocks.

Anthracite—The weather thus far has been anything but conducive to the sale of anthracite coal, but notwithstanding this condition, there is considerable coal moving, and were it not for the fact that the operators are hampered with small sizes, the situation would be entirely satisfactory. It will take cold weather, however, to put the customary snap into the market.

The production this week was somewhat curtailed, owing to the partial suspension at the mines on Monday, Columbus Day, which was generally observed particularly wherever the Italian element predominated. The demand at the present time seems to center on the household sizes, egg, stove and nut. Pea still lags, and buckwheat and rice can be purchased at considerably less than contract quotations. Just at the present time, there seems to be a slight dearth of orders for broken, but this situation will soon adjust itself.

Prices at Tidewater are as follows:

| | Circular | Individual |
|---------------|----------|---------------|
| Broken..... | \$4.75 | \$4.50 @ 4.60 |
| Egg..... | 5.00 | 5.00 |
| Stove..... | 5.00 | 5.00 @ 5.10 |
| Chestnut..... | 5.25 | 4.90 @ 5.00 |

Bituminous—The dealers and manufacturers in this locality seem to be heavily supplied with soft coal, but there is considerable coal moving nevertheless. What the operators are really looking for is a speculative market with the consumer, instead of the operator, on the short end.

BALTIMORE

Conditions still far from normal. Domestic business generally flat, but export trade holds up well. Consolidation Co. reports a big half-year. Anthracite in but moderate call.

While considerable coal is now moving coastwise, both to New England and to the South, the figures are below normal and little new business is originating. The trade is confined to long standing contracts for the most part, and some of these have been seriously cut. To the West and Northwest there is the same story of heavy stocks and inability to place any more fuel.

Prices remain very poor. West Virginia gas three-quarter is still offering around 85 to 90c., run-of-mine at 75 to 80c., while slack has advanced somewhat under a better demand and is now commanding 40 to 45c. at the mines. Prices in Pennsylvania hold firm, low grades selling around 95c. to \$1.05, medium coals at from \$1.10 to \$1.15 and the best grades at from \$1.30 to \$1.35.

The export business continues fair although the movement is not as extensive as in the middle of September. The report of the Consolidation Coal Co. for the seven months from Jan. 1 to Sept. 1, at a time when domestic business was admittedly flat, shows the effect of the heavy export trade, in which that company has played a leading role. The total output of the company for the period was 8,413,000 tons, as against 8,340,000 for the same period of last year, when home industries were demanding a record tonnage.

COAL CHARTERS

The "Journal of Commerce" reports the vessel situation as follows:

An active business was reported in steamer chartering, the major portion of which was for transatlantic voyages. Freights continue to offer steadily in several of the transatlantic trades, but as yet there is no appreciable increase in the demands of shippers in any other of the various trades. Tonnage continues to offer moderately, but not at any concessions in rates from those recently paid, and in some cases owners are demanding an advance over recent figures. For sail tonnage, there is but little inquiry in any of the various trades.

Coal charters have been reported as follows:

| Vessel | Nationality | From | To | Tons | Rate |
|--------------------|-------------|--------------|------------------------|------|--------|
| Angola | British | Norfolk | Phillipines | 3179 | |
| Isle of Jura | British | Baltimore | Havana | 2485 | |
| Kosfjord | Norwegian | Philadelphia | Sagua | 961 | |
| Agnes Manning | | Philadelphia | Jacksonville | 870 | \$1.00 |
| Pendleton Sisters | | Philadelphia | Calais | 899 | |
| Gemma | Italian | Virginia | Brindisi | 1978 | 3.21 |
| Ekaterini | Greek | Baltimore | Brindisi or Taranto | 2414 | 3.24 |
| St. Gothard | British | Baltimore | Puerto Padre and Sagua | 1790 | |
| James B. Drake | | Baltimore | Galveston | 991 | |
| Dallington | British | Philadelphia | Cienfuegos | 1613 | |
| Olaf | Norwegian | Philadelphia | Mexico | 1022 | |
| Loring C. Ballard | | Philadelphia | Boston | 627 | |
| Lovland | Norwegian | Baltimore | Port Limon | 1463 | |
| Santa Maria(bark) | Italian | Baltimore | Trapani | 819 | |
| Elizabeth T. Doyle | | Baltimore | Robert Bay, Martinique | 660 | 2.25 |

Note—Steamers are indicated by bold face type, all others being schooners.

COKE

CONNELLSVILLE

Market stagnant; only desultory negotiations; prices nominally unchanged. Production and shipments about 30% below top rate of year, while pig iron production generally has decreased about 20%.

The market continues stagnant, there being practically no buying of furnace coke and little of foundry. There are occasional negotiations on furnace coke, but nothing serious. One consumer has been inquiring about a 12-months' supply, but only on a sliding-scale basis, relative to pig iron. Foundry coke is a shade easier, but prices for standard grades are not quotably lower. Prompt furnace coke is nominal at \$1.65 @1.70, and contract at \$1.75@1.85; various grades of foundry coke are available at \$2 and upward, but regular standard grades cannot be had at under \$2.25@2.35 for prompt, contracts being \$2.35@2.50, per ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Oct. 3 at 249,152 tons, an increase of 1931 tons, and shipments at 253,852 tons, an increase of 5789 tons. The movement is now about 30% less than the average for several weeks in the early spring, when the maximum of the year was reached. In the same time pig-iron production in the country at large has decreased about 20%.

BUFFALO

Still much handicapped by the dullness in Canada. Reports continue of ovens shutting down.

The continued dullness of coke is very much against any immediate revival of the iron trade. Iron ore continues to come down by Lake at a good rate, but it is understood that much of it is contracted by the U. S. Steel Corporation, on which a royalty has to be paid this year, whether it is moved or not. For all that even those vessels are beginning to lay up, so that the Lake trade is not likely to be much of a success this season. Buffalo sells coke liberally to Canada when the demand is good, but the Canadian trade is very slack now. Coke ovens have shut down more or less all summer and are still being blown out.

BIRMINGHAM

There is no change this week in the coke market, business being extremely dull.

CHICAGO

Domestic coke is moving rather slowly. Prices are: Connellsville, \$4.75@4.90; Wise County, \$4.75; byproduct, egg, stove and nut, \$4.95; gas house, \$4.35.

ST. LOUIS

The market is unusually weak on foundry coke, at \$5.30 for selected Connellsville 72-hr. On domestic byproduct there is very little moving in and no demand. The demand for local gas-house is improving. Quotations are: Wholesale, \$4 per net ton f.o.b. tracks; retail, \$5.75.

LAKE MARKETS

BUFFALO

Warm weather makes coal sales difficult and situation is not improved. Fair demand for anthracite. No prospect of good business in bituminous in the immediate future.

Bituminous—The warm weather of late would have made the sale of coal difficult even with a liberal consumption. With the full briskness lacking it is hard to keep ahead of the mine output. Slack is only a trifle stronger, because of the moving of a big supply that has been on the market some weeks and also to the light Lake shipments from Ohio ports. So much three-quarter is shipped by Lake, to the exclusion of almost any other size, that there is always an excess of slack thrown on the market during the Lake season. There is not quite so much complaint of coal waiting on track, but there is still sufficient to keep the price down.

The state of the bituminous trade is still controlled to a certain extent by the Pittsburgh circular of last spring, though in slack times there is more and more coal sold at concessions, \$2.55 for mine-run and \$2.15 for slack. Allegheny Valley coal is about 25c. lower than Pittsburgh.

Anthracite—In spite of the warm weather and the brisk movement of coal early in the season there is a good demand for all sizes except egg and some shippers report an improvement in that lately. Screenings have moved rather slowly, but that is on account of the warm weather. It will take cool weather to make the local trade brisk. The Lake trade is still quiet, but anthracite is much more active than bituminous. Some of the Buffalo shipping agents would forward more anthracite if they could get it, as they report that the Western trade is good and there is a fair amount of room on the upper Lake docks. Shipments by Lake from Buffalo for the week were 104,000 tons, nearly all of the clearances being for Chicago and Duluth.

PITTSBURGH

Sale of 60,000 tons of Lake coal. Market generally stagnant, mine-run at \$1 and \$1.15 for steam and gas respectively. Operations at about 50% capacity.

The coal market in general continues decidedly inactive, with prices as soft as formerly. While the Lake trade in general is very quiet, a sale of 60,000 tons of screened coal for this trade has just been made by a Pittsburgh shipper, shipments to begin at once and to be completed well before the close of the navigation season. Such sales have been relatively rare in the past few weeks, the requirements of the Northwest trade being easily covered by coal under regular contracts with mines. Retail demand is no more than fair for the season, and the line demand is if anything a shade lighter than a week or two ago. Railroad consumption shows no change. The total Lake shipments will be easily 25% under last year's record. Very slack times in the coal trade are expected when Lake shipments cease.

Prices continue quite irregular. The best gas coal is held with some firmness at about \$1.15 for mine run, but steam coal runs off and down to about a dollar. Slack prices are rather irregular, averaging about 50c. a ton and with little signs of the firming up that should come as the Lake shipping season draws to a close. There is no talk of new circular prices being issued. The old prices remain: Slack, 90c.; nut and slack, \$1.05; nut, \$1.25; mine-run, \$1.30; ¾-in., \$1.40; 1¼-in., \$1.50, per ton at mine, Pittsburgh district. Mining operations are at little if any over 50% in the district, with prospects of curtailment in the near future as the Lake season closes.

TORONTO, CAN.

Domestic trade quiet but steam situation improving with the more encouraging business outlook.

The market for domestic coal continues rather quiet owing to the mild weather, and no active movement is anticipated until it becomes colder. Manufacturing conditions show some improvement as confidence returns and manufacturers in several lines are increasing their output. The call for bituminous for steam purposes is steady, with prices somewhat lower for carload lots. Quotations are as follows: Retail—anthracite egg, stove and nut, \$7.75; grate, \$7.50; pea, \$6.50. Bituminous steam, \$5.25; screenings, \$4.35; domestic lump, \$6; cannel, \$7.50. Wholesale f.o.b. cars three-quarter lump, \$3.78; screenings, \$2.64.

TOLEDO

Toledo market continues inactive but with a strong undertone. Lake movement good. Fine coal difficult to dispose of.

The market remained practically unchanged during the past week. The warm weather has knocked the bottom out of the domestic trade so far as demand is concerned although prices have held up well and dealers declare that it will improve as soon as weather conditions are more favorable. The steam market has been a source of some discouragement as the demand is not what had been expected and the export business has not been as great as was hoped for.

However prices have remained fairly firm except on fine coal which is a drug on the market. The Lake movement continues fairly good but the ore business is light, as has been the case throughout the summer. But dealers here, however, are far from pessimistic in spite of these adverse conditions. Money is getting easier and investments of all kinds are showing a marked improvement over what they were shortly after the announcement of the European war.

COLUMBUS

Slowness still the feature in the Ohio trade. The domestic demand hinging on the weather. Steam business slack, but Lake trade showing some activity.

The domestic market in Ohio is now entirely a weather proposition, and because of the continued high temperatures there has not been much demand for domestic sizes. This condition, however, is only temporary, and jobbers as well as operators are not discouraged over the prospects. As a result of the slack demand, there has been a number of cancellations of orders, but the circular prices are still fairly well maintained, the only cutting reported being where stocks have accumulated.

The Lake trade is still one of the active features of the market. Bottoms are apparently plentiful, and a rush of coal to the Northwest will be made before the close of navigation. Docks of the upper Lake ports are generally in good shape and the interior movement is fair.

Steam business is as bad as ever, and there is no immediate hope for improvement. Many of the manufacturing plants are buying on the open market, being loath to enter into contracts under present conditions. Railroads are taking only a fair amount of fuel and steam contracts are not expiring at this time.

Retail business is at a standstill. Dealers have sufficient stocks to last for some time, and are not selling to any extent. The bulk of the stocking business has been done and it will require colder weather to bring customers into the market. Retail prices are being upheld, notwithstanding the stagnation, and little cutting is reported. There is a distinct preference for the better grades, such as Pocahontas and West Virginia splints. Anthracite is also in good demand.

Production in Ohio fields is not very brisk. The Pomeroy Bend district reports a normal output, but that is about the only field which has held up. The Hocking Valley produced about 75 per cent. of the average, and the same percentage is reported from Jackson, Massillon and Cambridge.

Prices in the Ohio fields are:

| | Hocking Valley | Pomeroy | Kanawha |
|-------------------------|----------------|---------|---------|
| Re-screened lump..... | \$1.70 | \$1.75 | |
| Inch and a quarter..... | 1.60 | 1.60 | \$1.50 |
| Three-quarter inch..... | 1.45 | 1.45 | 1.45 |
| Nut..... | 1.15 | 1.40 | 1.15 |
| Mine-run..... | 1.15 | 1.15 | 1.15 |
| Nut, pea and slack..... | 0.30 | 0.35 | 0.30 |
| Coarse slack..... | 0.20 | 0.25 | 0.20 |

CLEVELAND

Warm weather has reduced the demand for domestic sizes, and the small grades are not being made in such large quantities. Lake shipments are about over.

Retail dealers have cancelled and postponed contract shipments the last week because of the mild fall weather. This has resulted in mines producing less coal, and the receipts of slack have fallen off proportionately. The prices of domestic sizes remain unchanged.

In the steam grades, the demand does not seem to change. There are a number of factories working 24 hours a day, but these are largely blanket and woolen mills. One or two automobile factories are working to capacity, as are some of the chemical companies, but such plants do not use a great deal of fuel.

Fairmount operators offered three-quarter as low as 80c. at the mines, and mine-run at 65c. West Virginia No. 8 is being shipped to this market on consignment. Pomeroy nut and slack carrying \$1 freight has been bought at 30c. by jobbers, while Panhandle has sold at \$1.35 to \$1.40. Hocking nut and slack are not being brought here, because it has not been satisfactory. This weaker tendency all along the line is only temporary, and orders for shipment are being taken at the prices current a week ago.

The Lake trade is taking boats subject to two weeks' storage before being unloaded. To meet this demand, ship-owners who have taken cargoes of this kind will lay their ships up for a 15-day period, which entitles them to a refund of insurance amounting to about \$750. This is the principal demand for vessels just now. Docks are not shipping enough coal to make space for current receipts and shippers are about through except for what coal they may send up in boats the last week or ten days. One company that takes in a cargo a day during the season has reduced this to one cargo a week. Canadian shipments are so light that one fleet of boats that usually carries a large amount of this coal has already gone into winter quarters. Three more docks went on single shifts last week, and by the end of this week all docks will be on this basis.

Prices for current shipment are as follows:

| | Pocahontas | Youghiogheny | Bergholz | Fairmount | W. Va. No. 8 |
|---------------------|------------|--------------|-----------|-----------|--------------|
| Lump..... | \$3.75 | | | | |
| Lump, 6 in..... | | | \$2.45 | | |
| Egg, 6 in..... | 3.75 | | 2.10 | | |
| Lump, 1 1/2 in..... | | \$2.40 | 2.25 | | |
| Lump, 1 in..... | | 2.30 | 2.10 | \$2.00 | \$2.05 |
| Mine run..... | 2.75 | 2.15 | 1.95 | 1.90 | 1.95 |
| Slack..... | 2.40 | 1.50 | 1.45@1.50 | 1.50 | 1.50 |

CINCINNATI

Domestic business is showing a slight improvement with the advance of the season. The steam market is still very dull. Lake movement has practically ceased.

The local domestic business is light, but considerably better than the steam market, which continues dull. Indications are not lacking, however, that this will not last much longer. But just now, as for several weeks, nut and slack is a drug on the market, being offered at the buyer's own price, and reports are to the effect that many operators are dumping it at the mines, without attempting shipment.

Domestic business is not what it should be at this season, conservative buying and selling serving to hold down the volume of coal handled. Dealers are not inclined to attempt to force sales, in view of the possibility of credit losses if the business depression continues, and consumers are awaiting cold weather before buying. So far there has been none, and with domestic storing below the normal, the amount of

the prepared grades sold has not reached anything like its usual level.

The Lake movement has practically ceased. This is due to the disinclination of owners of boats to send their vessels up the Lakes without prospects of a return cargo. As a result, the volume of fuel to be disposed of in the rail markets is all the larger. Prices tend to show this, as might be expected, although the only substantial concessions reported are in steam coal.

SOUTHERN

BIRMINGHAM

Coal quiet. No developments in South American business.

The market for the past week or ten days has been rather quiet, especially on steam coal. Lump coal seems to be improving somewhat, due to the approaching cool weather, but steam coal is very quiet, the mines running only about 60 per cent. of full capacity. Nothing definite has yet been done regarding the South American trade, and it now seems that it is a matter of proper finance arrangements that is holding up the deal. The pig iron market is quiet.

LOUISVILLE

Domestic demand has eased off and the situation is less favorable. Mine operations further reduced.

The one bright spot in the Kentucky coal market, the demand for domestic sizes, has disappeared because of the unseasonably warm weather. As a consequence the mines in both the eastern and western parts of the state are not operating to more than half capacity. Improvement is noted to a degree in general conditions and several of the operators express confidence that things are now at their worst. Here and there coal men note that they are receiving inquiries from the South for industrial needs and are taking heart.

The Kentucky market, however, has been invaded by the Tennessee state, convict-worked mines, which are shipping by the Southern Ry. which heretofore had done very little coal carrying in this market. This coal is underselling the commercially-mined product. The local domestic market has been helped some by the low stages of the river which have prevented heavy shipments of Pittsburgh coal.

MIDDLE WESTERN

INDIANAPOLIS

Mining much below normal for October, due to the summer weather. Mines generally on only about half time.

The weather has continued warm, with the temperature between 65° and 80°, and this has lessened the demand for the domestic grades, which have been the chief factor in the trade, and caused a general weakening effect all around. Operators estimate that the mines throughout the state are not doing better than three days a week. There is no improvement in the railroad or factory demand, and the steam-coal trade is much below normal for October.

It is said that the customary advance of 10c. to 15c., Oct. 1, has been abandoned on account of the unfavorable weather and other adverse conditions. Retailers are selling at the same prices that have prevailed. It is believed by many in the trade that normal conditions will hardly return before the first of the year, unless the unexpected happens, either at home or abroad.

CHICAGO

Weather conditions have resulted in light buying. Little change in the anthracite trade. Demand for Hocking coal has slowed up. Indiana operators handling a fair tonnage of domestic business, with prices reasonably firm.

The buying of both domestic and steam coals continues light, and the anthracite trade is just holding its own. In the smokeless market, conditions have been slow, but not soft. The major operators have been holding firmly on small sales to \$1.40 for mine-run, while the smaller producers and shippers of off-grade coal are accepting less prices, usually around \$1.25. The demand for lump and egg is still strong, but the output is light because the production of slack is so small. There has been a decided recession in the demand for Hocking coal; some of the operators have also been overshipping this market and some of the lump coal is getting up to demurrage and being sacrificed in order to move it. The circular price is \$1.60.

There has been, for the first time, some easing up in the price of splint. For a while, so much of that coal moved to

the East that Western prices remained firm, but within the last week the movement to the West has increased and quotations are lower. Springfield operators report no improvement in business. Indiana operators are having a fair run of domestic business, with prices reasonably firm.

Prevailing prices in Chicago are:

| | Springfield | Franklin Co. | Clinton | W. Va. |
|--------------------|-------------|--------------|-----------|-------------|
| Domestic lump..... | \$2.57 | \$3.05 | \$2.52 | |
| Steam lump..... | 2.02 | | 1.97 | |
| Egg..... | | 2.80 | | \$4.30 |
| Mine run..... | 1.87 | 2.15@2.25 | 1.87 | \$3.30@3.45 |
| Screenings..... | 1.07@1.12 | 1.40@1.50 | 1.07@1.12 | |

Harrisburg quotations are: Domestic lump and egg, \$2.80; steam lump, \$2.20; mine-run, \$2.15; screenings, \$1.40@1.50; No. 1 nut, \$2.80; No. 2 nut, \$2.40.

Cartersville prices are: Lump, \$2.80; egg, \$2.65@2.80; No. 1 washed, \$2.80; No. 2 washed, \$2.40.

ST. LOUIS

Market continues dull, though there are signs of an improvement. Warm weather adversely affects the domestic sizes.

The past week has been an unusually dull one, and it was somewhat unexpected. The steam market still continues as it has for the past two weeks, but indications are that the next week or ten days will see it considerably improved. The domestic market is still strong on lump, but the other sizes are weakening. This is due principally to the warm weather.

Anthracite still continues to move in, and is in good demand, both in the city and country. Smokeless continues a drug on the market and can be had at the purchaser's own price. While the market is in poor shape at this time, everything indicates higher prices soon.

The prevailing circular is:

| | Williamson and Franklin Co. | Big Muddy | Mt. Olive | Standard | Sparta |
|-----------------------|-----------------------------|-----------|-----------|-------------|--------|
| 2-in. lump..... | | | \$1.25 | \$1.10@1.15 | \$1.15 |
| 3-in. lump..... | | | 1.40 | | |
| 6-in. lump..... | \$1.60@1.85 | | 1.50 | 1.25@1.35 | 1.40 |
| Lump and egg..... | 1.85@2.15 | \$2.25 | | | 1.35 |
| No. 1 nut..... | 1.25@1.35 | | | 0.75@0.80 | |
| Screenings..... | 0.30@0.40 | | 0.80@0.85 | 0.10@0.15 | 0.20 |
| Mine-run..... | 1.05@1.10 | | | 0.75@0.80 | |
| No. 1 washed nut..... | 1.55@1.65 | 2.25 | 1.50 | | |
| No. 2 washed nut..... | 1.30@1.35 | | 1.35 | | |
| No. 3 washed nut..... | 1.10@1.15 | | | | |
| No. 4 washed nut..... | 1.00@1.05 | | | | |
| No. 5 washed nut..... | 0.15@0.20 | | | | |

KANSAS CITY

Open weather the past week permitted more liberal deliveries of coal to householders. Prices remain unchanged, but an increase seems likely soon.

Several weeks of rain, which hampered deliveries of coal, were followed last week by clear and cooler weather. Orders were stimulated, and coal moved more nearly in its seasonable volume. If the present movement continues unabated, it is predicted that the prices will be increased the coming week. Plenty of cars seem available now, and dealers are beginning to stock up against a possible shortage. Pennsylvania anthracite is moving better than any time this fall; there is said to be but little stored in their vicinity, not enough for reserve against a probable heavy demand.

Mine prices have been adjusted somewhat in the past week, after the general increase on many products three weeks ago. Lexington fancy block has gone off to \$2.10, and Richmond and Camden domestic block to \$2. Southern Kansas nut is \$2.10, mine-run steady at \$2, mill-run \$1.60, and slack \$1.35. Leavenworth lump, fancy lump and egg have advanced 25c. to \$2.50, \$2.65 and \$2.50, respectively; while mine-run has gone up 10c. to \$2.25 and nut 20c. to \$2.35. Higginsville Old Glory is quoted at \$2.10 to \$2.50. Iowa coal is 10c. higher, at \$2.10. Illinois fuel is holding its strong prices. Arkansas semi-anthracite has reached the top at \$3 for fancy lump, \$2 for mine-run and \$1.40 for slack. Arkansas semi-anthracite briquettes have reached the \$5 winter basis. Pennsylvania anthracite has advanced 30 to 60c.

PORTLAND, ORE.

Rumors that Great Britain has taken over a cargo of West Virginia coal. Market quiet.

From Seattle came the report this week that the American steamer "Montoso," which had just arrived there from Norfolk, Va., with a cargo of 3970 tons of coal, has been ordered to Esquimault, B. C., to discharge. It is understood the coal was purchased on short notice by the British Admiralty for use at the Esquimault Navy Yard.

The local coal market is fairly active and prospects are regarded good for the winter. There has been no change in quotations in past month. Coal briquettes are gaining in popularity for domestic purposes here. They are selling at \$9 per ton, delivered in one-ton lots.

Coal Contracts Pending

Contract No. 1—Columbus, Ohio—The Ruggery Building is in the market for 300 tons of West Virginia slack coal. Shipments are to be made at the rate of 25 tons per day, beginning Nov. 1, delivery to be made at Columbus, Ohio. All communications should be addressed to J. A. Shahan, 60 Ruggery Building, Columbus, Ohio.

Contract No. 2—Norfolk, Va.—The United States Government is in the market for 2000 tons of bituminous coal. All communications should be addressed to E. Eveleth Winslow, Lieutenant Colonel of Engineers, United States Engineer Office, Norfolk, Va.

FOREIGN

Chile, South America—Press reports state that Chile will probably be asking for bids for 300,000 tons of coal per annum for three years.

Argentine, South America—There are unconfirmed rumors to the effect that inquiries are being made for fuel to coal the Argentine Navy.

British Guiana, South America—The Pittsburgh foreign trade commission announces receipt of a request from the government of British Guiana, asking for bids on 5000 tons of bituminous coal, shipments to run over the next year. Unconfirmed reports state that tentative figures that accompanied the request for information, named considerably higher prices than are obtainable in the current market, in addition to which a substantial bonus is offered for prompt shipments.

Guayaquil, Ecuador, South America—La Compania de Alumdrado (Lighting Company) is in the market for 3500 tons of gas coal. Prospective bidders should state the specific gravity weight per cubic foot, and space occupied by one ton of gas coal. Give approximate analysis including moisture, fixed carbon, sulphur and ash, and a commercial analysis showing the gas per ton of coal, gas per cubic foot of coal, illuminating power of the gas in standard sperm candles, value of one cubic foot in grains of sperm, sperm value per ton of coal, coke per ton of coal (good quality), coke per cent. of coal, ash in coke, sulphur eliminated with the volatile products, sulphur in the coke, tar per ton of coal. Quotations should be c.i.f. Guayaquil. Address The Manager, Compania de Alumdrado, Guayaquil, Ecuador, South America.

COAL CONTRACTS LET

East St. Louis, Ill.—Swift & Co., recently contracted with the Rutledge & Taylor Coal Co., of St. Louis, for two cars of screenings daily until Mar. 31, 1916, and also with the Brees Trenton Mining Co. for the same tonnage under the same delivery conditions.

PRODUCTION AND TRANSPORTATION STATISTICS

VIRGINIAN RAILWAY CO.

Shipments over this road for June, July and August with details of leading operators were as follows in short tons:

| Shipper | June | July | August |
|---------------------------|--------|--------|--------|
| Knw., Glen Jean & E. R.R. | 32,920 | 24,084 | 22,588 |
| E. E. White ¹ | 26,073 | 29,424 | 34,884 |
| Gulf Smokeless | 21,869 | 22,294 | 26,028 |
| Loup Creek Colliery | 20,717 | 19,139 | 18,389 |
| Slab Fork | 19,811 | 20,544 | 27,523 |
| New River Collieries | 19,244 | 8,906 | 17,172 |
| Pemberton Coal & Coke | 17,253 | 18,212 | 20,242 |
| E. E. White ² | 16,253 | 18,788 | 21,631 |
| McAlpin | 14,324 | 14,906 | 14,447 |
| Windin Gulf Colliery | 13,278 | 14,268 | 18,938 |
| Long Branch | 12,454 | 10,545 | 17,789 |
| Bailey Wood | 11,707 | 11,544 | 13,141 |

¹From Glen White. ²From Statesbury.

Gross shipments from all mines totaled 361,906 tons as compared with 286,354 in August, 321,626 in July, and 321,181 tons for June of the current year.

I. C. C. No. 5036—Empire Coke Co. vs. Buffalo & Susquehanna R.R. Co.

1. Rates for the transportation of coal from mines in the so-called Clearfield region of Pennsylvania to Geneva, N. Y., not found to be unreasonable or unduly discriminatory.

2. The withdrawal of a rate of \$1.25 per ton applicable only on coal to be coked in transit at Geneva, N. Y., held to have been justified by the carriers on the ground that it was a preferred rate to a single city and industry and was not in fact a true milling-in-transit rate. Complaint dismissed.

FOREIGN MARKETS

GREAT BRITAIN

Prices improving and export business becoming more normal. The pit-prop question still unsolved. Retriktion in exports from other European states.

The London trade, especially for house coal, still continues quiet. The colder weather, however, has given a stimulus to the actual consumption, and a little more buying has been apparent. Public prices advanced 24c. per ton Sept. 26. Colliery prices are all advancing, and special quotations are now withdrawn. Many collieries still refuse to quote for standard qualities, as they have so many orders on hand. The seaborne trade is slowly mending. Manufacturing coals are firm, but slacks and small nuts are offering freely at considerable reductions.

The coal trade of the Tyne is reported to be stationary, and prices are difficult to maintain. On the other hand, a slight improvement in the household trade is again noticeable in the Lancashire market, while in Yorkshire the position is fairly firm, business having reached expectations. The Cardiff market has been quiet and irregular during the week, there having been less shipment.

Ever since the outbreak of the war, the pit-prop question has been to the fore among the many difficulties which have beset colliery managers. A commission, representing the Board of Trade, the Mining Association of Great Britain and the Timber Trade Federation, has now proceeded to Canada and Newfoundland to inquire into the possibility of opening new sources of supply in those places.

The British Engineers' Association has complained to the government regarding the inadequacy of the measure for controlling trade with the enemy. The association is of the opinion that the regulations should be more stringent.

Holland has prohibited the export of coal, coke and briquettes, and Switzerland has placed an embargo on the export of fuel of all descriptions. The Board of Trade is in receipt, through the foreign office, of telegraphic information to the effect that the Portuguese Government has authorized the exportation of pitwood from Portugal to the United Kingdom so long as there is no shortage of these articles in the home market.—"The Colliery Guardian."

Oct. 2—The market is dull and featureless. Most qualities are freely offered and concessions can be arranged where buyers are able to take prompt delivery. Quotations are approximately as follows:

| | | | |
|-----------------------|-------------|-------------------------|-------------|
| Best Welsh steam..... | \$1.08@5.28 | Best Mountmouthshires.. | \$4.08@4.20 |
| Best seconds..... | 4.32@4.56 | Seconds..... | 3.96@4.08 |
| Seconds..... | 4.20@4.32 | Best Cardiff small..... | 1.92@2.04 |
| Best dry coals..... | 4.32@4.56 | Seconds..... | 1.20@1.56 |

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport; both net, exclusive of wharfage, and for cash payment.

Freights—Chartering is fairly active and rates for the Mediterranean are firmer. For South American destinations, the market is dull and featureless. Rates are approximately as follows:

| | | | |
|---------------------|--------|-------------------|--------|
| Gibraltar..... | \$1.68 | Aden..... | \$2.22 |
| Malta..... | 1.68 | Colombo..... | 2.34 |
| Marseilles..... | 1.76 | Sabang..... | 2.34 |
| Algiers..... | 1.56 | Singapore..... | 2.52 |
| Genoa, Savona..... | 1.96 | Las Palmas..... | 1.68 |
| Naples..... | 1.74 | St. Vincent..... | 1.80 |
| Venice, Ancona..... | 2.10 | Rio Janeiro..... | 2.94 |
| Alexandria..... | 1.92 | Monte Video..... | 2.64 |
| Port Said..... | 1.86 | Buenos Ayres..... | 2.88 |

SWITZERLAND

Coal imports for 1912 and 1913 were as follows:

| | 1912 | 1913 |
|----------------------|-----------|-----------|
| Germany..... | 1,489,039 | 1,590,577 |
| Austria-Hungary..... | 7,449 | 5,340 |
| France..... | 218,149 | 196,934 |
| Belgium..... | 152,836 | 130,494 |
| Holland..... | 17,502 | 15,750 |
| Great Britain..... | 27,095 | 30,358 |
| Total..... | 1,912,070 | 1,969,454 |

In addition 439,495 tons of coke and 968,530 tons of briquettes were imported, nearly the whole of which came from Germany. In 1912, 411,288 tons of coke and 864,402 tons of briquettes were imported.

SPANISH IMPORTS

Spanish imports of coal for the first six months of this year and last year were, in metric tons:

| | 1913 | 1914 |
|-----------|-----------|-----------|
| Coal..... | 1,466,532 | 1,329,095 |
| Coke..... | 183,298 | 192,085 |

FINANCIAL DEPARTMENT

Pond Creek Coal Co.

President Thomas B. Davis, of this company, reports, in substance, for the year ending Dec. 31, 1914:

Development and Construction—Seven mines have been operated continuously throughout the year. From these seven mines there have been produced up to the end of this year 566,965 tons, and your company is in a position now to largely increase the output. The tonnage mined during the year exceeds the estimates of the management, and it has been very generally stated by authorities that your company's production for the first year after shipments commenced, constituted a record. Actual work has been in progress about 20 months, and all of the mines did not begin to ship coal until January, 1913, or later. While the seven mines now in operation are not developed to their full capacity, they are able to produce a much larger tonnage of coal than they did last year, and the production will be increased as markets are found for the coal.

The company now has completed construction work as follows: 52 four-room houses, 41 five-room houses, 13 six-room houses, 1 seven-room house, 259 eight-room houses, 1 ten-room house, 1 twelve-room house, three stores, power plant, power, light and telephone lines, five miles of railway sidings, six substations, seven fans and fan houses, warehouse, machine shop, six mine repair shops, two Y. M. C. A. buildings, and has done much construction work in the way of building retaining walls to keep creeks in their channels, constructing and improving roads and other construction work.

The company has purchased equipment as follows: 33 mining machines, 7 fifteen-ton electric locomotives, 16 six-ton electric locomotives, 816 steel mine cars, mine pumps, repair-shop tools and machinery and other equipment.

Transportation—During the current year the Norfolk & Western Ry. Co. completed the construction of their Williamson and Pond Creek branch at an estimated cost of \$1,200,000, including the cost of a bridge across Tug River and yards near Williamson. This branch represents a high-grade piece of railroad construction work, and the road is built strong enough to handle very large tonnages of coal.

The Norfolk & Western Ry. service during the past year has been all that your company could have desired. It is the more remarkable that the Norfolk & Western Ry. Co. should have been able to give practically a full supply of cars at all times, considering the difficulties under which they labored during part of the year, on account of the tremendous damage done to their properties by the abnormal floods of April, 1913.

Your company is assured by the management of the Norfolk & Western Ry. Co. that the present standard of service will be continued in the future.

Distribution of Coal—The coal of the Pond Creek Coal Co. was tested out with very satisfactory results by some of the largest users of coal in this country, and it has been amply demonstrated that the coal is not only highly appreciated as a desirable coal for byproduct coking purposes, but also for use in the production of illuminating gas and for steam and domestic purposes.

In ordinary times a coal of the character produced by your company is always in good demand, and should be marketed without much difficulty.

Financial and General—The proposed plan of financing, referred to in last year's report, was adopted by the stockholders at their annual meeting on Apr. 9, 1913. The issuance of \$3,000,000 of 6% bonds, secured by mortgage and convertible into stock at \$25 per share, and the increase in the authorized capital stock of the company to 350,000 shares, were approved. Bonds to the amount of \$2,000,000 were issued and the money was paid into the company's treasury June 3, 1913. Your company now has the financial ability to develop its properties to a capacity of 10,000 tons per day. The actual date when this tonnage will be realized is, of course, some distance off, as development to such a capacity requires time.

BALANCE SHEET

| Assets | | Liabilities | |
|----------------------|-------------|----------------------|-------------|
| Real estate..... | \$1,001,508 | Cap. stock issued... | \$2,000,000 |
| Const. and devel.... | 1,619,709 | Share-prem. account | 250,000 |
| Equipment | 430,594 | Convertible bonds... | 2,000,000 |
| Cash..... | 1,018,483 | Accounts payable... | 115,063 |
| Accounts receivable | 99,531 | Other misc. items... | 36,497 |
| Inventories..... | 230,350 | Funds and reserves | 10,180 |
| Deferred charges.. | 11,563 | | |
| Total | \$4,411,740 | Total | \$4,411,740 |

Note—For previous annual report of this company see "Coal Age," Vol. 3, p. 980.